

PLASTICS & MOLDED PRODUCTS

Volume 7

NOVEMBER 1931

Number 23



A new and growing use of Bakelite Molded

With the increasing realization that attractive packaging is a distinct aid to sales, more and more products are being marketed in colorful, attractive Bakelite Molded boxes and containers. Uses range from powder boxes to fish line cases, and new ones are being introduced almost daily.

There are many varieties of Bakelite Molded, each one possessing some special combination of properties. Whenever you encounter a molding job of unusual character, our engineers and research laboratories will be glad to cooperate with you in determining the proper methods and material to use.

This trend is creating new and profitable business for the makers of Bakelite Molded articles, and is lending new sales advantages to the manufacturers of products that may be packaged in these containers. Write us for the latest developments in this new and interesting market, ask for Booklet 51M, "Bakelite Molded".

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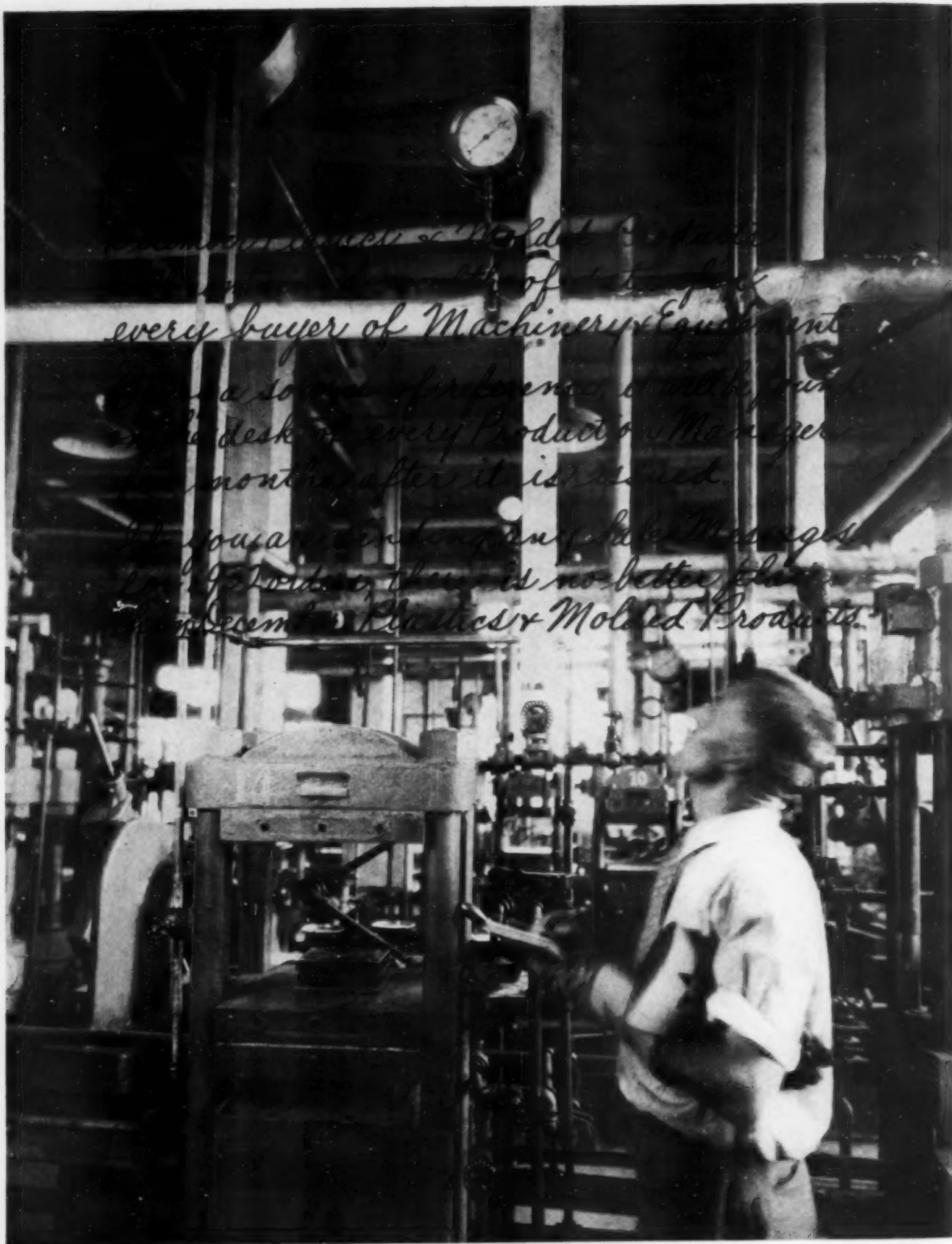
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numerical sign for infinity, or unlimited quantity. It symbolizes the infinite number of present and future uses of Bakelite Corporation's products.

THE MATERIAL OF A THOUSAND USES



Plastics & Molded Products
every buyer of Machinery & Equipment

a source of reference, it will be found
on the desk of every Production Manager
months after it is issued.

If you are sending any kind of message
to the Editor, there is no better place
than December Plastics & Molded Products.

PLASTICS & MOLDED PRODUCTS

Reg. U. S. Pat. Off.

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❖ Contents ❖

PLANNING AND DOING NEW THINGS ARE THE BEST DEPRESSION CURES	600
<i>By H. S. Spencer</i>	
MOLDED MONOPHONE RINGS IN NEW SALES TRENDS.....	601
<i>By H. E. Clapham</i>	
NO MOLDING POWDER WITHOUT WOOD FLOUR	602
<i>By Ernest F. Blodgett</i>	
TECHNOLOGY OF CELLULOSE ACETATE	604
<i>By Dr. Aladin</i>	
WASTE COTTON RAGS MAKE A BASE FOR A NEW LAMINATED PLASTIC	607
<i>By L. T. Frederick</i>	
PATENT OR COPYRIGHT—A SHELTER FOR MOLDED PRODUCTS.....	609
<i>By Waldon Fawcett</i>	
TODAY'S MILLION AN HOUR MARKET FOR MOLDED PRODUCTS.....	617
<i>By Benn C. Budd</i>	
ACETATE PRODUCTS CORP. LIQUIDATES BUSINESS	619
LEADERS OF THE INDUSTRY: LEON V. QUIGLEY	621
SHOP PRACTICE NOTES ON MOLDING TECHNIC	625
<i>By Leon V. Quigley</i>	
NEWS OF THE INDUSTRY	629
BOOK REVIEWS	632
TECHNICAL ABSTRACT SECTION	633
AND NOW IN CLOSING	642

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PLASTICS PUBLICATIONS, INC., PUBLISHER

A
CAST PHENOLIC PLASTIC

MARBLETTE

The most beautiful and
practical plastic made
in this country.

Every day we are booking new
accounts and concerns who
bought material when we started
in business are still on our books.
This is convincing proof of our
ability to satisfy the most critical.

Samples and prices on request.

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PLASTICS & MOLDED PRODUCTS

Reg. U. S. Pat. Off.

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CONFIRMED pessimists who maintain that there is no Santa Claus are doomed to disappointment. The Plastics Industry is hard at work supplying the Old Man with his stock in trade. Some of his new wares are shown on this page but next issue will contain the Plastics Industry's contribution to the Christmas trade.



Many molded pieces have been ejected from the presses since the days when Bakelite, to the smoker, meant only pipe stems. On the left is an unusual ash receptacle, a product of Electrcraft Corp., with a Durez molded cup. The cup will not burn or discolor. On the right are shown Freeman Novelty Co.'s "Korner Trays", molded of Bakelite. Each tray is equipped with cigarette holders in the shapes and colors of the card suites.



First appearances are sometimes deceiving. This item is not a powder box, but a sugar dispenser. It is made of Bakelite molded, orange in color, with a black knob. It can be used in restaurants, tea rooms, etc., or could even be distributed by the sugar manufacturer to the ultimate consumer as a souvenir.



Flexible, feather-weight, odorless, and unbreakable plastic vials, in either transparent, opaque or tinted styles, and capped with molded Durez closures, have been recently announced as the answer to the ever-present problem of breakage in transit and in use. Collapsible tubes, bottles and jars are also available.



Norton Laboratories, Inc. are merchandising this handsome molded package to candy and confection manufacturers and many are the fine words that have been spoken of it. The design is striking and, molded in a number of light and dark materials, finds ready acceptance as a permanent gift after its contents are gone. Photo courtesy General Plastics, Inc.



Triplex Safety Glass Co. molds these tumblers out of Durez and then coats them with pastel shade enamels for the chain store trade. Six colors are available.



No need for a dinner grouch. Once your meal has been cooked, it can be kept hot on this new device, which has a base and frame of Bakelite molded.

NON-PHENOLIC molded applications occur less frequently than the older materials. Such is the case only because these are relatively newer and not so well known. However, we have a number of urea plastic jobs all lined up for the December New Applications page. Look for them.

Planning and Doing New Things are the Best Depression Cures*

By H. S. Spencer,

Advertising Manager, General Plastics, Inc.

SOMEONE has said that if we pretended there were no depression, everyone would forget it and maybe there wouldn't be any. Well, maybe. But for keeping a factory busy, analyzing is far more effective than pretending.

At any rate, it has been the opinion of General Plastics' executives that thinking and talking depression produces nothing but despondency, so we simply cut it from our vocabulary. We've held more frequent sales meetings so that our field men wouldn't become too absorbed in the best excuse a salesman ever had for not getting business. Of course, it's useless to deny that a depression exists, but as far as individual activity is concerned, it's well to ignore it. Plan new things—and do them. If you can't afford to do the big things, do the little obvious ones; send out more letters, for example. Have the salesmen make more calls. Check over your mailing list to avoid wasting your direct mail material. If necessary, cut it down to the most logical prospects. Take highly specialized groups and send out personal letters. Check your trade paper advertising returns carefully. Naturally, these are all things which should be done in normal times, but there's a tendency to loosen up when things are going well.

Obviously, now is the time to buy business paper space and direct mail printing. The trade and class papers are lighter, and their rates in many cases are lower. We haven't seen any mail-volume statistics but our own incoming mail shows much

less advertising material than formerly. And the way that printing salesmen lurk around and increase their calls leads us to believe that they're not so busy either. Many of the better printers are reducing their prices. All told, it's a good time to plan and buy direct mail and trade paper space.

Market Analysis

Yes, we admit it's pretty hard to get the purse string holders to approve expenditures. But take what you have, the year's appropriation, and juggle it a bit to see if it can't be re-apportioned to better advantage. Analyze carefully your potential and existing markets; thinking doesn't cost a cent. Ask yourself some questions. Is our market elastic? Are we concentrating on the right market? Would development work on other markets open up new consumption? Should we pull out of this market or that market? Are we trying to cover too much ground or too many fields? Wouldn't a new or improved product stimulate our sales? How can we add a new appeal to our product? Remember there's always something happening somewhere, depression or no depression. One of the worst effects of a depression period is the stifling of creative thought and analysis, the cessation of development work, the temptation to sit tight and wait for things to work themselves out.

Record of Achievements

Analysis and development work are responsible for many so called depression-advertising successes. The advent of four-hour lacquers and enamels put paint brushes in the hands of

millions of men, women and children. A new market was opened—unpainted furniture. Electric clocks came into being just ahead of the depression, and sales have never slackened. Mechanical refrigeration is breaking all sales records from month to month. Shoe sales are booming, due to the widening of old markets with special new styles. Then there's the movement toward better packaging for all kinds of products: Drugs, cosmetics, food, candies, silverware, watches, etc. Shirts, bedspreads, tablecloths and even meats are being packaged and repackaged. This movement was given its impetus by this self-same depression, for manufacturers turned to better packaging when the sales of the old package began to fall off.

Some manufacturers have made themselves 'depression-proof' and go sailing through periods like the present one without a falter. Usually the reason is simple. They have watched trends, anticipated trends, analyzed trends; they have concentrated on certain markets and played them hard, and when sales started dropping, they turned to new markets; they kept their products modern, constantly improving them, adding new appeals or extra advantages. They tell the public of these advantages and the public buys.

In a country so alert to fads and fashions as ours, where whole industries spring up and disappear overnight, a manufacturer has to be constantly on the alert if he is to survive. He must play trends hard. He must

(Continued on page 638)

*Reprinted from American Paint Journal Convention Daily, Oct. 8, 1931.

Molded Monophone

In Colorful Lumarith

Rings in New Sales Trends

By H. E. Clapham

Advertising Manager, Automatic Electric, Inc.

WHEN next you pick up an attractive, colorful Monophone in the office of a discriminating executive or in the modern apartment of a friend, you may be very nearly certain that you are speaking into a Strowger Monophone molded from Lumarith, one of the materials now employed in the manufacture of this famous instrument.

With colors selected by leading interior decorators and a design styled by the world's largest manufacturer of dial telephone equipment, the Strowger Monophone in colors comes to the market at a particularly happy moment. Now, as sales have indicated, is the psychological moment for the new idea in product design and manufacture.

Molded Materials Surmount Difficulties

Developing a molded material for telephone instrument construction was not an easy matter. Several factors had to be considered. Subscribers are likely to handle the instrument with soiled hands. Not frequently, the entire instrument is accidentally knocked from the desk or table onto the floor. Perspiration from the hands of the user, destructive atmosphere conditions—all these elements combine to test the durability and permanency of the materials used in the telephone instrument. It is easy to understand why fragility in an

Strowger Monophones make a perfect accessory in the modern ensemble. Insert shows press set up to mold five Monophone bases.



instrument would soon prove a losing investment for a telephone company.

Another requirement of the molded material, equally important, was that its lustre and finish should remain undimmed—particularly in the softer shades of color. An advantage of Lumarith, among the other molded materials used by the Strowger Monophone, is that the color goes clear through. There is no surface coating to chip or crack or dim with age.

Selecting the colors for the new Strowger Monophone would in itself make an interesting story. Leading interior decorators were interviewed and contributed their suggestions for a color selection likely to blend with the greatest variety of interiors. Artistic and decorative effect was given careful consideration in selecting a molded material for the new Monophone. Ivory, Nile green, jade green, Chinese red, royal blue and orchid were finally selected as the colors in the instrument modeled in Lumarith.

As an additional refinement, the new Strowger Monophone in colors is available with metal fittings which are plated in chromium or gold as desired and comes equipped with a silk



cord to match. Here again the desk telephone becomes an object of beauty in the home, office or apartment. It is clearly evident that the sales possibilities of the new instrument have only been touched. Telephone companies are finding in the new Strowger Monophone an additional sales feature for the private line extension. And the cost, it is important to add, of the new Monophone molded in Lumarith and similar materials, has been found to be quite moderate.

Greater Strength and Durability

One feature which contributes to the desirability of a molded material in a telephone instrument is its high dielectric strength. In the new Monophone, the handpiece, mouthpiece, cradle, box, receiver shell and similar parts are all molded from Lumarith. For additional strength one part of the instrument, the handpiece, is molded about a central core. In finished form the molded material is impervious to oil, moisture and common solvents. Parts are light in weight, mechanically strong and chemically inert; they are readily machined

(Continued on page 631)

Wood Flour for Molding Powder

The story of the rise of a New England industry
which supplies this essential for plastic materials

By Ernest F. Blodgett

Manager, New England Wood Flour Mills, Inc.



IN 1920 Mr. Ira Mowery, who was employed by the New England Baled Shavings Co., of Albany, N. Y., a concern handling about 70% of the shavings baled in New England, saw the need of a new industry that could be started in New England, and use as its raw material, the shavings handled by this company. After an investigation he decided that a mill that could grind wood flour would more nearly fill his needs than any other, and would make the customer he desired. Therefore he tried to interest capital that would undertake this business and finally was able to get some Manchester, N. H. men to take up the project. In 1922 these men started the Suncook Wood Flour Co. in Suncook, N. H., a small town about eleven miles north of Manchester, N. H. Mr. Mowery supplied what knowledge of the business he was able to obtain, and the New England Baled Shavings Co. added wood flour to the line they were selling.

Unfortunately, shortly after the mill began to run, Mr. Mowery died very suddenly, and

what knowledge he had died with him. The writer, whose life had been spent in the waste end of the New England Lumber business, was placed in his position. Of course, as part of our duties it became necessary to take up the wood flour end where Mr. Mowery left it, and to sell the product of the Suncook Wood Flour Co. As Mr. Mowery's investigations were only partly completed, and but very little recorded, it meant that a great deal of work was necessary to arrive at the place Mr. Mowery left off. Very little was known regarding wood flour except that certain industries used it. Much could be written regarding our experiences with the trade as we tried to find out what was the matter with the product being manufactured by the company. These experiences ran from being fired out of offices to being told not to come back until we knew what we were talking about. However, gradually we obtained knowledge, as one must if they stick to anything long enough, and the more we learned, the better we liked the business.

Early Discouragements

However, by the time we found out what was really wanted, the men who were backing the mill began to get discouraged. We finally came to a point where we believed that we had discovered the trouble with the flour as made by the mill and wanted them to make a change in manufacture. The owners however, said that they had had enough and the mill

was closed. We then tried to interest new capital that would take over the Suncook property, make the changes recommended and manufacture wood flour. Our idea was, that there was no one in the manufacture of wood flour that catered to the molding trade. We believed that this was a coming business and deserved a specialist whose thought was for them, and not for the end that gave the big tonnage.

Experimental Stage

Every minute that could be spared from business was spent in investigation. In 1928, the same men who started the mill surrendered to our enthusiasm and offered to let us take the mill and try out our ideas. In July, with Mr. Joseph Delory, who had been the superintendent in charge of the original mill, we went to Suncook to try to prove that an idea could be made practical. We overhauled all the machines, readjusted, changed as we thought right, and got the mill to run as we thought it ought to run. Mr. Delory had a way with machines which nearly made them sit up and beg to do the things he wanted them to do. After we ran enough to get samples, the mill was closed, and we went to New York to see if we were right or if the experiments were a failure.

Some time before this we had interested Mr. Pohle of the Burnet Co., in the possibilities of the Suncook Mill, and Mr. Pohle was as enthusiastic and

hopeful as we and waited anxiously for the samples. He co-operated in every possible way with us and the mill is indebted to him for a great deal of help in supplying necessary knowledge as to what the trade demanded. We then went to the trade with the samples and before long had orders enough to warrant starting the mill again.

During the summer of 1928 more business was offered than could be taken care of, and plans began to be talked over as to what was the best thing to do. Before these plans came to a head, a spark from a passing locomotive unfortunately set fire to the mill and on Oct. 17, 1929 it was burnt to the ground.

Present Plant

On February 15, 1930 we started in production with a mill that was the last word in engineering. The plant of the New England Wood Flour Mills, Inc., is situated in East Manchester, N. H., just two miles from city hall, and is on the Portsmouth branch of the Boston & Maine R. R. It contains six acres of land, large enough for any expansion for years to come. It has a four family dwelling house, barn, sheds, heated garage, and storehouse capable of holding 1,500,000 lbs. of wood flour in bags. A large three story brick mill in which the grinding is done, a two-story annex for the storage of

empty bags, etc., steel silo, boiler house, etc.

Everything that can be done with machinery instead of human hands is done that way. The mill is 100% electrified with General Electric equipment. Every inch of wiring is in conduits and all electric fixtures are vapor proof so there is no danger of fire from that cause. Every moving part of the mill is grounded to get rid of static. All conveyors are sealed with a slight inward leak of air so that there will be no dust inside the mill. The wood from which our flour is made is eastern white pine. This is first ground into sawdust and blown into a steel silo. This is 100 feet high and holds 250 tons of this raw material. From this silo the material is automatically taken into the mill at just the right amount and is there ground into the grade of wood flour desired. The 62-DM grade so greatly desired by the molding trade is checked and double checked. This is ground by special machines designed especially to produce this grade, and all the flour has to pass thru cloth of a 82 mesh. From here the flour is conveyed to the bagging room and is bagged in red burlap bags 100 pounds to the bag. In this room there is some dust as no

way has been found to keep it from escaping when the bags are taken off the bagging machines. As the bags come off the baggers the flour is again inspected, and the bags weighed and sewed up. If the flour is to be shipped immediately the bags are shot into freight cars, but if they are to be stored, they are conveyed into the storehouse and piled against future needs.

Electrical Equipment

Our electricity is delivered to us at 11,000 volts and we transform it to 440 for power and 110 for lights. Our high tension switchboard is equipped with an oil switch for overloads, while our 440 volt control board has not only the oil switch, but a no voltage release as well. Blown fuses are almost unknown with us. Each section of the mill has its own control board with molded panels, manufactured by the Bull Dog Electric Products Co. Even our hand lamps are vapor proof, and are grounded.

We are now installing additional machinery that will give us a material we call "Newflo-mite" which we believe to be the finest ground wood flour in the entire world. This we expect to be in production about the first of December.

The self-unloading silo has a capacity of 250 tons of shavings used in the milling of wood flour.

The six acre plot of the New England Wood Flour Mills has on it barns, sheds, storehouses, main factory building, silo, sidings and room for additional expansion



Technology of Cellulose Acetate

Progress in the Preparation of this Cellulose Ester as Shown
in the World's Patent Literature during the last Decade

By Dr. Aladin

Continuing this concise but comprehensive review of the world's patents on Cellulose Acetate which issued during the past decade, we now come to those patents which particularly relate to the

IV. Acetylation

(Continued from page 556, November issue)

Serial No.	Patent No.	Patentee	Title	Brief of Description
135.	B. P. 145,525	A. -G. fur Anilin Fabrikation	Preparation of Cellulose Acetate.	Completely clear solutions of cellulose acetate are obtained when the acetylation is carried out first with a catalyst other than sulfuric acid, and the latter is only added during the later stages of the process.
136.	B. P. 146,092	Societe Chimique des Usines du Rhone	Manufacture of Cellulose Esters (addition to B. P. 13,696/1914)	Cellulose is allowed to stand immersed in a mixture of acetic acid and acetic anhydride containing five percent or less (on the weight of the cellulose) of sulfuric acid for a period of four or five hours at 30° C. until a homogeneous paste results, whereupon further amount of acetic anhydride are added and the acetylation is completed at 40° C. until complete solution has taken place.
137.	B. P. 183,908	Plausons (Patent) Co., Ltd. (H. Plauson)	Method for preparing cellulose derivatives.	Cellulose that has been ground under water in a colloid mill can thereafter readily be acetylated by the mere use of acetic anhydride and glacial acetic acid.
138.	B. P. 190,732	J. O. Zdanovich	Manufacture of Cellulose Acetate.	See U. S. P. 1,445,382 (No. 86).
139.	B. P. 196,641	J. O. Zdanovich	Manufacture of Cellulose Acetate.	See U. S. P. 1,457,131 (No. 87).
140.	B. P. 200,160	Plauson's (Patent Co.) Ltd., (H. Plauson)	Manufacture of Cellulose Esters.	Cellulose is treated with the capor of acetic anhydride which has been mixed or diluted with gases such as air or even chlorine, and catalytic gases such as hydrochloric acid, sulfurous acid, sulfur trioxide, etc. By shortening the treatment the acetylation can be confined to the surface of the cellulose.
141.	B. P. 200,186	J. O. Zdanovich	Manufacture of Cellulose Acetate.	See U. S. P. 1,528,810 (No. 89)
142.	B. P. 207,562	H. Dreyfus	Manufacture of Cellulose Acetate.	See U. S. P. 1,708,787 (No. 125).
143.	B. P. 226,309	L. A. Levy	Manufacture of Cellulose Acetate.	In place of the acetic acid as a solvent, one employs a low boiling solvent such as ethyl formate or methyl acetate, having a boiling point not over 60° C.
144.	B. P. 237,591	Ketoid Co. D. A. Nightingale	Manufacture of Cellulose Acetate.	See U. S. P. 1,604,471 (No. 122).
145.	B. P. 244,148	J. O. Zdanovich	Manufacture of Cellulose Acetate.	See U. S. P. 1,600,159 (No. 121).
146.	B. P. 258,020	H. J. Mallabar	Manufacture of Cellulose Acetate.	See U. S. P. 1,652,573 (No. 123).

Serial No.	Patent No.	Patentee	Title	Brief of Description
147.	B. P. 263,771	British Enka Artificial Silk Co. Ltd.	Manufacture of Cellulose Acetate.	A mixture of acetic anhydride and glacial acetic acid is allowed to stand for some time and only then is the condensing agent added, after which the mixture is again allowed to stand for some time. The cellulose, whose moisture content can be carefully ascertained and controlled is only then introduced; as it has been found that the viscosity of the cellulose acetate is dependent upon the amount of water present during the acetylation.
148.	B. P. 269,530	G. W. Miles and C. Dreyfus (British Celanese Ltd)	Manufacture of Cellulose Esters of organic acids.	Cellulose, preferably after a pretreatment with glacial acetic acid that contains a little sulfuric acid is treated with organic acids such as acetic acid, propionic acid etc, in presence of phosphoric acid or mixtures containing the latter.
149.	B. P. 294,415	G. W. Morden	Manufacture of Cellulose Acetate.	Cellulose suspended in the usual acetic anhydride glacial acetic acid mixture is first treated with sulfuric chloride and afterwards with sulfuric acid to complete the acetylation. After hydrolysis, the cellulose acetate obtained is soluble in acetone.
150.	B. P. 300,140	British Celanese Ltd. (G. Schneider)	Manufacture of Low Viscosity Cellulose Esters.	Cellulose is acetylated with the use of sulfuric acid as a catalyst at temperatures that must not exceed 55° C. whereby any far-reaching depolymerization of the cellulose is avoided. After the acetylation is completed, definite amounts of water are added and the mixture allowed to stand for some time, whereupon the solution of cellulose acetate thus obtained is poured into water to precipitate the cellulose acetate as such. The latter is afterwards further treated with dilute acids.
151.	B. P. 301,036	I. G. Farbenindustrie A. G.	Manufacture of Cellulose Esters.	Liquid sulfurous acid, i. e. sulfur dioxide, is employed as the diluent in the preparation of cellulose esters. For example, cellulose in the form of cotton linters is immersed in a mixture of liquid sulfur dioxide, glacial acetic acid, acetal chloride and zinc acetate, which latter gradually becomes converted into the still more effective zinc chloride. By employing other acid anhydrides, cellulose esters other than the acetate can be obtained.
152.	B. P. 303,135	Ruth-Aldo Co., Inc. (H. L. Barthelemy)	Manufacture of Cellulose Esters.	The acetation is carried out in distant stages, whereby it is stated that a saving in acetic anhydride is effected. The mono- and di-acetates are first made in separate baths at temperatures between 18 and 26° C., while the triacetate is made at 20-35° C., the product being finally heated to about 55 or 60° C. Sulfuric acid with or without the addition of bromine and oxidizing agents is used as the catalyst.
153.	B. P. 303,432	C. Ruzicka	Manufacture of Cellulose Esters.	A mixture of glacial acetic acid and trichloroacetic acid is chlorinated, and into the resulting mixture there is placed the cellulose. Afterwards acetic anhydride and zinc chloride dissolved in glacial acetic acid are added.

Serial No.	Patent No.	Patentee	Title	Brief of Description
154.	B. P. 303,491	Ruth-Aldo Co. Inc.	Manufacture of Cellulose Esters.	Cellulose sulfate is treated with the anhydride of a fatty acid such for example as acetic anhydride in admixture with glacial acetic acid without the use of catalysts, the latter being gradually formed as the result of the decomposition of the cellulose sulfate.
155.	B. P. 305,096	Ruth-Aldo Co., Inc. (H. L. Barthelemy)	Preparation of Cellulose Acetate.	Cotton which has been treated with sodium hydroxide and rosin soap is thoroly washed, centrifuged and dried and is then treated with vapors of glacial acetic acid and then with a solution of chlorine in glacial acetic acid, this being sprayed on the cotton. The acetylation proper then follows in five distinct stages, the first of which involves the use of chromic acid and the second of bromine as catalysts. Finally, after the decomposition of the excess acetic anhydride by means of water, some hydrochloric or hydrofluoric acid is added so as to render the cellulose acetate soluble in acetone.
156.	B. P. 305,674	I. G. Farbenindustrie A.-G.	Preparation of Cellulose Esters.	Cellulose is acetylated in the presence of chloroacetic acid as a diluent, employing any one of the following catalysts: sulfuric acid, zinc chloride, thionyl chloride, the temperature being 50° C. The hydrolysis of the resulting cellulose acetate to the acetone-soluble stage is effected by the addition of 50% acetic acid.
157.	B. P. 306,531	U. S. Industrial Alcohol Co.	Manufacture of Cellulose Acetate.	Cellulose is acetated in a closed apparatus by the use of a mixture of liquid sulfur dioxide and acetic anhydride at 17 to 18° C. The acetic anhydride may be produced from ketene and glacial acetic acid. Addition of glacial acetic acid is optional. The catalysts employed may be sulfuric acid, zinc chloride, phosphoric acid or dimethyl sulfate. The hydrolysis of the cellulose acetate is effected in the same apparatus with the addition of the required amounts of sulfuric acid. at 60 to 70° C.
158.	B. P. 309,203	I. G. Farbenindustrie A. G.	Manufacture of Cellulose Esters.	To the acetylating bath there is added the sulfonic acid or nuclear-substituted naphthalene, such as isopropyl naphthalene.
159.	B. P. 312,096	H. Dreyfus	Manufacture of Cellulose Esters, Artificial Silk and Plastic Masses.	Cellulose esters such as cellulose acetate and especially those of the higher fatty acids can be obtained by the use as catalysts, of chlorides of the heavy metals such as those of iron, manganese, copper, nickel, cobalt, but best with those of tin; which are employed in amounts from 7 to 25% of the weight of the cellulose that is undergoing treatment. The process can be carried out either in presence or absence of hydrochloric acid.
160.	B. P. 312,242	Boehringer & Sons	Carrying out of exothermic reactions.	In order to avoid the development of too high a temperature as the result of exothermic reactions between solids and liquids, such for example as during the acetylation of cellulose when the structure of the latter is to be retained, there are added inert liquids having a high latent heat of vaporization. Examples: sulfur dioxide in liquid form, or low-boiling halogenides of hydrocarbons; or low-boiling ethers, etc.

This series on acetylation will be continued in the December issue.

Waste Cotton Rags Make a Base For a New Laminated Plastic

By L. T. Frederick

Vice-President, Continental-Diamond Fibre Co.

THE conventional method of producing laminated resinoid sheet stock consists in impregnating sheets of fabric or paper with the phenolic resinoid in solution and pressing a number of such superimposed sheets with the application of heat. It was my purpose, as embodied in the recently granted United States patent No. 1,799,506 to develop a low-priced resinoid containing sheet material by making use of cotton fibres by disintegrating rags, waste, etc., into small pieces and flowing these into a continuous sheet by means of an air suction drum instead of weaving them into cloth or converting them by the usual manufacturing methods into paper. In the latter process, the fibre would undergo a loss of 50 percent in weight as well as a change in character. In the first process for modifying the fibre a considerable manufacturing expense is involved.

Low Material Cost

It is found that a product made by this and similar means has, as expected, a very low base material cost, especially if a solvent reclaiming scheme is used in the drying operation, as it has a bigger yield per pound of material consumed; it has the flexibility similar to that obtained by the use of cotton fibre woven into sheet form before pressing; makes possible the use of very cheap rags and cotton waste fibres and produces a product which can be made with comparatively low investment in machinery for its manufacture. When made in sheets,

a product of this kind can be produced at a price which should be attractive to the building trades and in many cases as a substitute for sheet metals for finish covering purposes.

The method of making this composite material can be best understood by studying the accompanying diagram and the description which follows. There is a vertical chute or tower 10 having an opening in the side adjacent to which there is a stationary drum 12. The drum approximately fills the opening and is foraminated at that portion facing the inside of the tower and extending to the upper part of the drum. Air is constantly withdrawn from the drum through a duct 14 and thus air is constantly being sucked into the drum from the tower and the upper portion of the drum. The drum is mounted upon a suitable framework or table 16. At the opposite end of said framework is a pulley 18 which rotates constantly when the machine is in use and serves to cause an endless screen belt 20 to travel around drum 12 and pulley 18. The screen belt is of course pervious to air, and hence permits the air to be drawn through it from the tower. In the special construction shown the upper run of the screen belt is not completely horizontal but passes over a guide roller 22 located not far from drum 14; thence under a guide roller 24; thence under and up around a guide roller 26 located at a short distance from the roller 24; thence up and around a guide roller 30 which

is on the same level as roller 22 and at a relatively short distance from it, for example a foot or two. Between the rollers 22 and 30 there is a drip pan 32 for collecting any drippings from the spray pipe 34 whose function is to spray the binder upon the work strip as the latter passes beneath it. The binder ordinarily consists of a solution of a reaction product such as Bakelite, that is, a phenol formaldehyde condensation or reaction product, whose characteristic is to harden under the action of heat and pressure.

It is desirable to place a strip-rod 36 beneath the work strip at the far end of the pan 32 as illustrated in Figure 1.

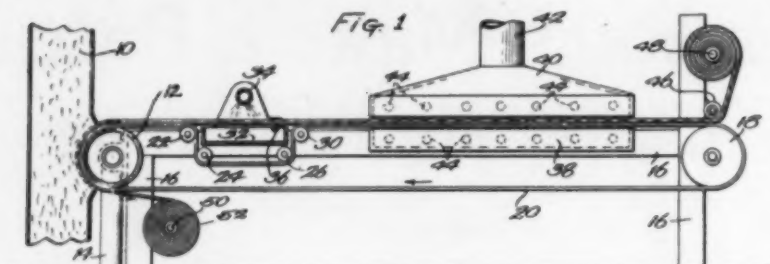
Resinoid Fumes Withdrawn

At a point beyond the spray apparatus just described there is a dryer consisting in the present case of a casing 38 located below the upper run of the screen belt 20 and a hood of casing 40 located above it. The latter is equipped with a flue or uptake 42 for removing the fumes and moisture. Inside of this heater are heating elements 44 which may be electric resistant units, gas heaters, steam coils or other known heating means.

Located at the far end of the machine remote from the tower there is a guide roller 46 and a take-up reel 48. At the head end of the machine below the lower run of screen belt 20 is a storage reel 50.

Now to describe the method which may be carried out me-

The diagram indicates the manner in which the small pieces of fabric are built up on the impervious strip by means of suction, sprinkled with a resinoid binder, dried, and then rolled up ready for laminating or shredding.



chanically by means of the apparatus shown and described: A supply of fabric in the form of a roll 52 is placed upon the supply reel 50 and the strip led thence around the inner end of drum 12; thence over the top of it outside of the screen belt 20 directly to the guide roller 46. Thus in the form illustrated the fabric strip 50 does not follow the screen belt at all points but is separate therefrom in the neighborhood of the drip pan 32. When the machine is ready for operation particles of the work material are dropped down through tower 10. As above indicated these consist of small particles of fibrous material such as small pieces of canvas, duck, linen fabric, paper, cotton waste or lint. As they approach the neighborhood of drum 12 they are induced by suction to float toward it and pile themselves upon the air pervious strip 52 overlying the screen belt 20. They become felted or matted upon this foundation strip to a thickness depending upon various factors such as the rate at which the belt is traveling, the intensity of the suction and the density of the falling column of particles within tower 10.

Binder Applied in Excess

Until the particles arrive at approximately the top of drum 12 they are held in position by suction. Thereafter as the belt starts on its horizontal run the felted material will remain on it simply under the action of gravity. Soon after the work material has left the drum it comes

beneath the sprinkler 34 which applies a solution of the binding material. The work strip is of course porous and the motion comparatively slow, and it is desirable to thoroughly impregnate the work material. Therefore it is desirable to apply a surplus of the binder, and this surplus drips through into pan 32, the remnant being stripped off by the stripper rod 36 as the work material finally leaves the pan.

Thereafter the work strip passes through the dryer 38, 40 where the solvent is removed from the binder, thus causing the work strip to issue from the dryer in dry condition thoroughly impregnated with the binder. The strip is then rolled up on the takeup reel 48.

When the binder is of the phenol condensation product type, the product produced by my machine and method may be used in various known ways, for example, it may be cut up into sheets, the sheets piled one upon another and the pile subjected to heat and pressure to produce a so-called "laminated" product; or the product of my machine and method may be ground, chopped up or shredded to produce a molding material, which may be introduced into molds and there subjected to heat and pressure to produce various mechanical elements. One of the chief advantages of my invention, however, is that it makes it possible to produce a truly laminated product from small scraps of fibrous material, and it is known by those familiar with the art that a lam-

inated product is stronger as a rule than a product composed of small particles of fibrous material irregularly arranged and held together by the reacted binder. My invention makes it possible to produce actual sheets of material treated with unreacted binder ready for introduction into the hot press in which the reaction takes place and the sheets are consolidated and rendered insoluble and infusible in the form of a so-called laminated product. It will be observed that the backing strip 52 remains with the rest of the product; in fact it becomes a part thereof because where thin and loosely woven fabric like cheesecloth is employed as the backing strip the air suction actually draws some of the fibers into the meshes of the cheesecloth so that to a certain extent they become incorporated therewith, an effect which is usually enhanced to a certain extent by the binder which drips through and tends to carry any loose fibers with it down through the cheesecloth. The result is that a unified product results and the final strip or sheet may be handled as a unitary article.

A product produced as per the invention has remarkable strength and has a weight of about $\frac{1}{2}$ that of aluminum and $\frac{1}{6}$ that of steel, all of which should make it especially attractive from a weight saving standpoint in the construction of moving parts such as outside covering for airplanes, construction of truck bodies and freight, trolley and railway cars because of the extensive area that can be covered with a small weight of material.

An additional advantage is found in the fact that since the material is not susceptible to rust, corrosion or moisture absorption, its structure and appearance remain the same under all ordinary conditions of weather and temperature and consequently painting for protection purposes is not necessary.

PATENT or COPYRIGHT

A Shelter for Molded Product Design

By Waldon Fawcett

IT is not to be, after all, a case of merely persuading Congress to accept and approve a ready-made, predigested plan for providing better protection for original designs in industry. Instead, behold a new-found necessity for the national legislature to choose between two separate and distinct shelters for the shapes, forms, molds, patterns and surface ornamentations that bring novelty to manufactures. Shall designers and designer owners find refuge from copy-cats in the proposed new institution of Design Copyright? Or, shall "exclusive models" be kept exclusive by reliance upon the old stand-by, Design Patent,—albeit Design Patent done over for the occasion?

If, as now seems probable, Congress must take its pick, a sudden obligation comes down upon the molded product industries and other art industries or commodity lines that live partly by variety and imagination in design. All too obviously, Congress is not qualified to make, of its own accord, an analytical and discerning selection between the alternative vehicles for balking design piracy. The law-making body at Washington must needs take its cue from the design creators and design fabricators. Hence, the necessity that the molders of composition materials, even more than the rank and file of U. S. Senators and Representatives, shall promptly acquaint themselves with the relative merits of the two species of fortifications for distinctive design.

In order that we may have the proper background for this fresh responsibility let us have a peep at the circumstances which brought about the present crisis in policy, if we may call it that. The unrest in business America, over the inadequate means for fencing off private designs, dates back twenty years, or more. To the very beginning of the period when American manufacturers began in earnest to "sell design". And long before the general American public had become style-conscious and color-conscious in anything approaching the present degree. When the restlessness set in, the country was provided, and had kept in operation continuously for many years, a seemingly good system of Design Patents. This system for conferring rights of monopoly in reproduction was operated by the U. S. Patent Office, and was the complement of the other species of patents, viz, mechanical patents, and process patents.

Design Patent Too Slow

As American industry came to depend more and more upon design to win consumer-acceptance, the time-tried institution of Design Patent came in more and more for a heavy fire of criticism. First of all, it was slow moving. It was necessary, on occasion, for manufacturers to wait as much as eight months to a year to get through a patent on design. Meanwhile, the market might go stale. Or a competitor, who did not wait for a patent, might steal the show with a near-duplicate design.

Secondly, the patenting of designs was costly. What with lawyer's charges, and official fees, the expense was upwards of \$50 a throw. All well enough if protection was sought for a long-lived design in an expensive medium. But not so good for the fabricator of short-lived, seasonal designs sold at popular prices.

Most serious, though, of all the grievances that piled up against the rigid and inelastic system, was the requirement laid upon design candidates by the circumstance that every patent grant presupposed the presence of "invention". In other words, a design, in order to be eligible for a Design Patent, had to be, and still has to qualify, as a bona-fide invention. Theoretically, an invented design must express inspiration,—present the fruit of a stroke of genius. Actually, the censors at the Patent Office did not demand invention nor artistry of a very high order in submitted designs. Still, the exaction of invention was there. No telling just how it would operate. And the situation irked many members of design-dependent industries who felt that the whole basis of eligibility was wrong.

The mainspring which, in this plight, started the whole movement for reform in design protection was the conviction on the part of the would-be reformers that "authorship", not "invention", should be the gauge of design recognition and Federal certification. In other words, the premise was put

forth that it should not be necessary to produce an absolutely unique design in order to merit protection. Instead, the Government should pedigree any design which was original and different, which presented a new effect, even if that effect was obtained by a fresh arrangement, or regrouping of motifs and elements old in the art. To put it differently, here was a line of logic that said that there was nothing really new under the sun. Such being the case, the rewards of dexterity, adaptability, and convertibility should go to a transforming artist who rescrambled decorative details in such a way as to produce an unusual and unfamiliar ensemble.

Speedy Design Registration

Taking this tack, the crusaders for cheaper, simpler, and more quickly available protection have been busy for a decade and a half trying to persuade Congress to junk the whole institution of Design Patent and set up in its place a new structure to be known as Design Copyright or Design Registration. This project has made such headway that, in the last Congress, the Vestal Bill was passed by the U. S. House of Representatives and was blocked from consideration in the U. S. Senate only because of a filibuster in the closing days of the session. Congressman Vestal states for *Plastics and Molded Products* that he plans to introduce in the 72nd Congress a new edition of the Design Copyright Bill that will assume virtually the same form as before.

Design Copyright is loudly touted as doing all the things that Design Patent does not do, to the sorrow of some folks in business. For one thing, the entry fee would be nominal. Quick action would be assured, —a design being cleared, according to expectation, in a space of ten days or two weeks. And originality in molding or

modeling would be infinitely easier to prove than realization of 100 per cent invention. Furthermore, a Governmental institution of Design Copyright would, it is claimed, in its workings, mesh or interlock much more effectively than Design Patent with the private or inter-industrial systems of design registration which are now being set up in various trade fields.

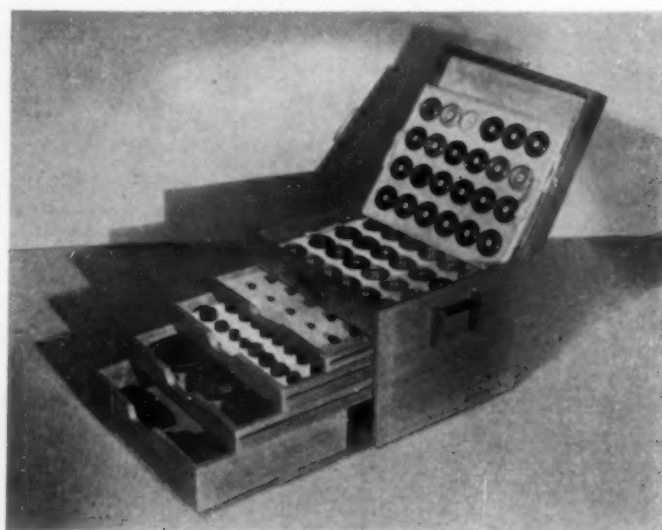
Breaking this autumn though is news which shows that the design protective program is not to be, as many had supposed, solely a case of waiting until Congress is in the mood to ratify Design Copyright. In an interview for *Plastics and Molded Products*, Senator C. C. Dill states that it is his intention to introduce in the new Congress a Bill to revise and modify the existing system of Design Patent, in lieu of the proposed substitute. This means that Congress, if and when it is ready to provide modernized insurance for "industrial property", must decide between rival agencies.

In a way, the move by Senator Dill comes as a complete surprise. In another way it doesn't. During the hearings, last winter, in the Senate Com-

mittee on Patents, when the Design Copyright Bill was considered at length, Senator Dill remarked more than once that he believed that the alleged shortcomings of the present system might be met and the new needs of design creators served by changes in the existing Design Patent system. Few of his hearers supposed, however, that the Senator would carry his beliefs to the point of proffering a substitute. Perhaps he was moved, in part, by certain recent changes for the better in the status of Design Patent. For example, the Patent Office, since it has been placed under the management of the Department of Commerce, has so speeded up its routine that designs submitted for patent are cleared much more promptly than in former years.

What, most of all, is making for a lively contest between the rival instrumentalities of design protection is the muster of a considerable number of patent attorneys and other specialists who have rallied to the defense of Design Patent. These conservatives argue that industry will rue it if, merely for some slight gains, it throws

(Continued on page 612)



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Patent or Copyright Shelter for Molded Product Design

(Continued from page 610)

overboard the Design Patent system with its background of 90 years of test cases, and has to start from scratch to assemble a new chart of pace-setting precedents covering the interpretation and application of a new law. Even if the established Design Patent system were liberalized it would yet have its main guide-posts in the form of trial-and-error episodes showing the limitations of the system.

Before fabricators and molders of composition materials undertake to tell their respective Congressmen which is their choice of design shelters they should reckon with the difference in the amount and kind of protection available. It is unfair to let the trade go on the supposition that it can get from Design Copyright, at a popular price, the exact equivalent in protection that is obtainable via Design Patent at the higher cost. Of course, after all, the proprietor of a design, however credentialed, may have to sue an infringer to stop the poaching, and collect damages. But, unless the design-owner merely wants the privilege of mounting a "Patent" or "Copyright" sign as a warning against trespass, it is important to know just how much backing he has from Uncle Sam.

Searches Eliminated

The main difference, on this score, between a Design Patent and the proposed Design Copyright is that the former is issued only after a preliminary "search" to establish priority, whereas the latter attests the designer's claim but with no questions asked. Design Copyright might be characterized as a dating service,—a formal acknowledgement of the time

and place of the staking of a design claim, with Uncle Sam in the role of notary public. The Copyright Office would take a registrant's claim of design creation at face value but would make no search to confirm the assertion of authorship or discovery. Should a dispute arise over the antecedents or ownership of any design, the rival claimants would have to fight it out in court.

No more in the case of Design Patent than in the projected alternative of Design Copyright does Uncle Sam undertake to enforce a design monopoly or punish design raiders. But, in the case of a Design Patent, the Government does, thanks to its preliminary precautions, give a design owner more support. At least, the possession of a patent constitutes testimony by a Governmental authority that the inventor's design was unanticipated, so far as the Patent Office records showed. All of which is important only in deal-

ing with willful sinners. Presumably, Design Copyright would be just as effective as Design Patent in placing "on notice" that great majority of designers and design-reproducers who have no desire to borrow ideas or duplicate designs and who ask of any design clearing house only the best possible facilities for ascertaining what designs have been preempted in a given field and what design themes are yet open. Which-ever shelter is ultimately selected for designs, it is important to fabricators of composition materials that the privilege be extended by Congress of making the "notice" on the individual reproduction so small that it will be unobtrusive and harmonious on the smallest molded product.

THE well-known Plastic Molding Co., Ltd., has been taken over by F. A. Hughes, Ltd., London, the latter firm now marketing Cellomold.

The Plastics Institute of Great Britain has been legally constituted as a company limited by guarantee. It has a notable program for the coming winter well in hand.

G. E. Plastics Department Representatives



A recent conference of General Electric Plastics Department representatives at the Highland Country Club, Meriden, Conn.

Front row, left to right:—G. A. Gustafson, in charge of mold equipment and die making; G. M. J. McKay, research and experimental laboratory; S. W. Severance, in charge of plastics engineering, Pittsfield plant; H. D. Randall, manager of sales; R. E. Coleman, manager; G. M. Stone, executive assistant; F. J. Groton, in charge of factory management and research; E. L. Feininger, in charge of varnish manufacture, Schenectady plant.

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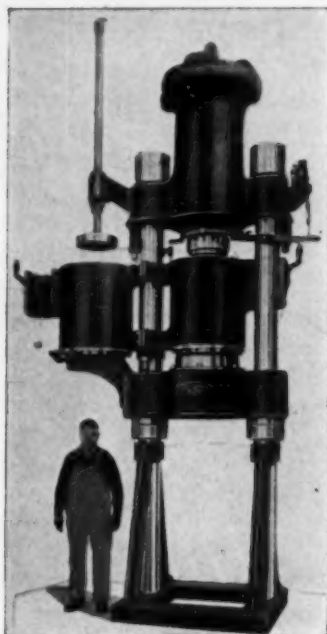
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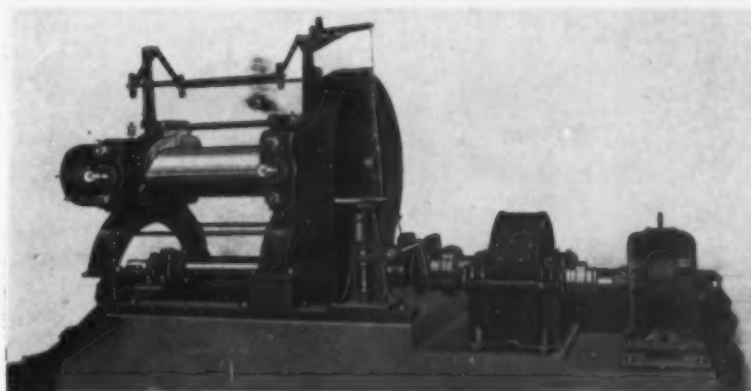
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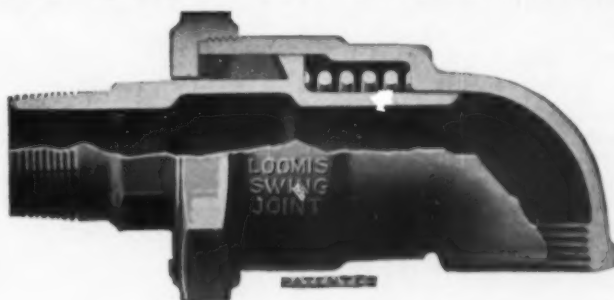
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Today's Million an Hour Market Sells Molded Products

By Benn C. Budd

Sales Manager, American Insulator Corp.

AT nine o'clock this morning cash registers started clanging their way toward the million dollar goal they reached by ten o'clock. All day long, hour by hour, million by million they registered sales—sales—sales.

This is not a fabled picture of the past. It is just what is happening every day in a small group of stores—less than ten per cent of the total listed under the heading of "Department Stores".

It is doubtful if there is anywhere a finer market for new molded products than in the little-known, oft-misrepresented field of department store merchandising. Just as it's good fishing sense to go where the fish are biting when they are biting, so it's good business sense to go **selling** where they are **buying**.

Stores Which Sell

The small group of leading department stores are **buying** hundreds of millions of dollars worth of merchandise for the simple reason that they are **selling** today at the rate of over two billion dollars per year.

According to the U. S. Census sixteen and one-half cents out of every dollar spent in retail establishments passes over the counters of department stores. "House Furnishings" include many uses for molded products and over half the House Furnishing money is spent in department stores.

Ten thousand motor trucks are needed to deliver the goods—no one knows how many horses are still in use. Over a million

people are engaged in **buying** and **selling** in the bigger stores—over four million if you count all the department stores.

As far as molded products go it is safe to say that the better grade department store represents one of the greatest reachable markets in existence. A great market—a sound market but nevertheless a market which can be only reached by a thorough knowledge of how these stores function.

Scientific Buying

In the first place a department store is "Big Business". It is not a little local shop multiplied a thousand times. It has its peculiarities, one being that merchandise is seldom "sold" to them in the ordinary sense of the term.

Few industries support so many highly trained executives—few industries have reduced buying to such an exact science.

I was talking about department stores to a sales executive the other day and he disagreed with my picture. His experience showed that department stores sold little more of his product than other types of stores, such as jewelry or drug stores. Another sales executive told me of their sad experience in attempting to get their line into better department stores. Both were right from their viewpoint and both brought out perfectly the point that it was their "policy" that was wrong and not the store.

In the first instance the merchandise was sold to anybody who would buy. Thus the de-

partment store was in direct competition with dozens of other stores—many of which cut prices without thought of profit. It is hardly to be expected that a business with millions invested in equipment and buildings—a business with a prestige to uphold—is liable to engage in a price cutting competition with every small store in its community. The store's answer to this manufacturer was to carry a small quantity of his goods on hand to **fill such demand as manifested itself**.

In the second instance it was plain that the manufacturer assumed that high pressure selling would work on a big store buyer just as it would on his other connections. He used high priced men who wore out their patience and his capital waiting for ten or fifteen minute interviews with rather hard-boiled buyers who did nothing but ask questions.

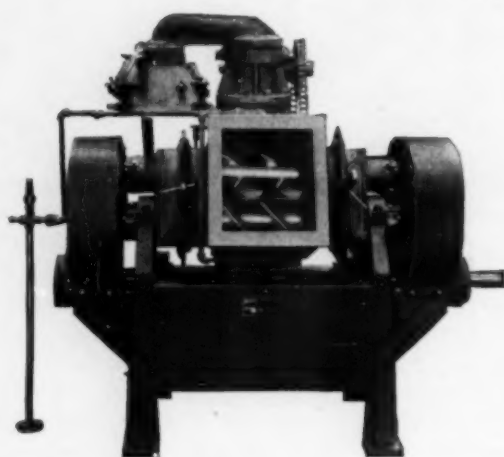
Selling or Promoting

To clarify the mistakes of these two concerns, let's look at the department store as if it were our business. We would naturally be chary about spending our capital to foster the business of a manufacturer who failed to appreciate just what we were doing for him. We would know that the difference between a valuable connection and an ordinary outlet for goods was spelled "PROMOTION."

We would see that difference exemplified in New York a few weeks ago. Two stores stocked and displayed the same item at the same price. One store

"For the want of a nail a shoe was lost,
For the want of a shoe a horse was lost,
For the want of a horse . . . the kingdom was lost--"

Poor Richard's Almanac



SIZE 8, TYPE III, CLASS C VACUUM MIXER
AND KNEADER
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Discharge

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the design and construction of a Mix-
ing Machine, a promising new product
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Nor need you, when it is so easy to get
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machine to perform any process of
mixing, kneading, compounding, col-
loiding, or dissolving involved in the
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uct—to establish successfully on a
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ed in the laboratory.

Through us

You can tap a storehouse of knowledge and experience
You can avail yourself of our experimental department
You can obtain machines which are *exactly fitted to the job*



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WERNER & PFLEIDERER DIVISION
MAIN OFFICE AND PLANT IN SAGINAW, MICHIGAN
Sales offices in New York, Buffalo, Chicago, and San Francisco
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Bakelite Molding



THE RECTO MFG. CO.

Appleton and B. & O. R. R.
Cincinnati, Ohio

sold 25,000 in three days, the other less than 200 in a week. One store "promoted" the item, the other merely "carried" it. "Promotion" costs money and it's seldom that a store will promote an item at its full retail price unless it has protection.

Still assuming we are running "our" store we would hire at large salaries expert buyers—men who often know more about the products they buy than the salesmen who sell them. We would demand a satisfactory return for the money we spent on these buyers, in other words we would keep them busy. Furthermore, as a guide or controller for our buyers we would hire expert merchandise managers—men who not only knew merchandise but who also knew trends, values and our customers. With this setup we would gladly welcome every manufacturer's representative. We would like to ask him questions about his

product—how it was made, its quality, where it was being sold, what it cost and how much profit we would make. If his answer were satisfactory we would buy—perhaps a very small quantity to try it out. If it moved we would re-order and if the time was ripe we would "promote." But it would be hard to "sell" us something we did not want. And it would be hard to get us to spend time experimenting against our beliefs.

Our experience with the AICO Clock, sold exclusively through Department Stores, has proved conclusively that stores are easy to do business with if you do it their way. And the fact that more than a hundred of the finest department stores in America are displaying and "promoting" our clocks in a satisfactory way is a direct result of a satisfactory policy from the store's point of view.

Acetates Products Corp., British Plastics Producers, Liquidate Business

FOLLOWING the second annual meeting of the Acetate Products Corporation, Ltd., in London, an extraordinary annual meeting was held which decided upon the voluntary liquidation of the undertaking. The resolution being carried by 314,015 votes to 103,786. Sir William Peat, famous accountant, was appointed liquidator, and it was decided to recommend that a committee of stockholders should act with him in an advisory capacity.

This firm has had a most unhappy career. Report for the 13 months from December 1, 1929, to December 31, 1930, states that stock-in-trade has been drastically written down, this contributing to a heavy loss. The factory at Slough did not realize expectations and also caused a big loss, while from the defaulting stockholders only £2,615 (\$13,075) was recovered.

The largest defaulter was the issuing house, against which action was taken, but the concern went into liquidation during the financial slump. Profit and loss debit increased from £28,224 (\$141,120) to £40,420 (\$202,100). The auditor's report states that £45,427 (\$227,135), being the greater part of amounts in arrears on shares, appears to be unrecoverable.

Presiding at the second annual meeting, William Thomas Harvey, chairman and managing director, said that the presentation of the balance-sheet had been postponed, as they had hoped the case against Morris Greenhill, one of the founders of the company, would be decided, and that they would be able to present a more favorable statement to the stockholders. The claim against Mr. Greenhill was for £50,000 (\$250,000),

but the company has been unable to obtain the money.

"The corporation," Mr. Harvey explained, "was formed to extend existing factories for the manufacture of non-inflammable safety celluloid, but it was found impossible to extend the existing factories to produce four tons a day and a new factory was built. The corporation has had to buy its basic material, and that has been the cause of all the trouble."

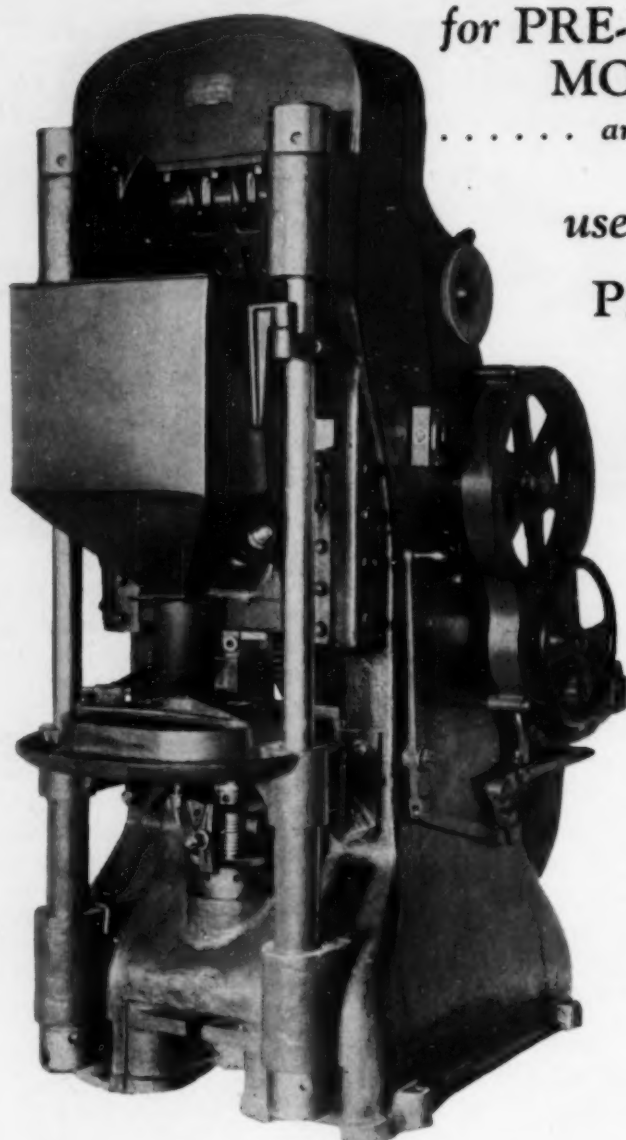
The report and accounts were adopted, and the liquidation meeting followed.

BRITISH NOTES

The Department of Overseas Trade has dispatched to the more distant countries the first of three letters which are to be sent to 55,000 individual buyers in over 100 countries informing them of the arrangements for the British Industries Fair, which will be held in London and Birmingham next February and March. The statement that two-thirds of the space in the Fair has already been let, despite the present depressed state of trade, shows that manufacturers are realizing the immense commercial value of the Fair.

The directors of Triplex Safety Glass Co., the original safety glass concern, announce a dividend of 10 per cent for the year to June 30 last. This is double the payment made for each of the two previous years, although for 1929-30 profits showed a good recovery from the previous year's sharp setback. At the annual meeting last year the chairman, dealing with future profits, said that the company would benefit during the whole of the current year from economic working of the factories at King's Norton.

A new transparent wrapping known as "Transcetic," which is waterproof, greaseproof, and non-inflammable, has recently been introduced by a British concern as a competitor of Cellophane.



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MOLDING POWDERS

..... and for the best of results, too,

use a "STANDARD"
PRE-FORMING PRESS

Note how the Massive Tie-Rods bolt down the head . . . They eliminate all "spring" on frame and table—a feature that means longer life to the press and better preforms at every stroke!

STANDARD PRE-FORMING PRESSES
THRU ABSENCE OF SWAY, WEAR
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REPAIRS TO DIES AND PARTS

SUPPLIED THROUGHOUT WITH
HIGH GRADE BEARING BRONZE
BUSHINGS, AND KEPT SMOOTHLY
RUNNING WITH THE ALEMITE-
ZERK SYSTEM OF LUBRICATION.

When all-time, minimum cost upkeep and
dependable performance prompt your
thorough investigation, get details from

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Designers and Builders of Good Machinery Since 1873

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Molding Materials for Master Molders



MAKALOT the
Ideal Material
for Extrusion
Molding.

MAKALOT, phenol plastic molding compounds, have been successfully used for two years. They have been proven to be the freest flowing, most rapid curing compounds in use today.

MAKALOT has been used for many difficult molding jobs when every other compound failed.

MAKALOT molded parts are strong, lustrous, free from surface imperfections, corrosion resistant and have excellent electrical characteristics. They meet the most exacting specifications.

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MAKALOT CORPORATION

262 Washington St.,

Boston, Mass.

Manufacturers Of
Synthetic Phenolic Resins, Varnishes and Molding Compounds

• Leaders of the Industry •

Leon V. Quigley

Technical Editor, Bakelite Corporation
and Publicist Extraordinary to the
Plastics Industry

TODAY, as in Shakespeare's time, a rose smells as sweet by any other name but modern industry finds it essential to have the public consciousness deliberately directed to the significance of its policies and trademarks. Mr. Leon V. Quigley, Technical Editor of the Bakelite Corporation, directs the dissemination of information pertaining to his company's product, Bakelite. One authority has stated, in these pages, that this name exceeds in value that of all the physical buildings the company owns.

During the past six years, Mr. Quigley's work in spreading the story of Bakelite resinoid has included the presentation of addresses before professional societies and trade associations, the preparation of innumerable articles for newspapers and the technical press, cooperation with authors of books and with magazine editors, the preparation and distribution of institutional and educational bulletins, pictorial services and motion picture films.

Mr. Quigley earned both his Bachelor of Science and Master of Science degrees at the Worcester Polytechnic Institute. Upon graduation he became an instructor in the department of chemical engineering, and at the same time joined forces with Professor Herbert F. Taylor of the civil engineering department, as associate editor of the Alumni Journal. He is an engi-

neer by training but he has acquired the temperament of the capable publicist. Whether speaking or writing, he is methodical and thorough in the preliminary accumulation of facts, yet always so interesting in his presentations that he invariably captures the attention of his audiences.

His Newspaper Background

Before entering, in 1925, upon his work of organizing the public relations program of Bakelite Corporation, Mr. Quigley had been a contributor to the newspapers of Boston, Worcester, Springfield, and other New England cities. It is a fact, known to the business managers of some of these papers, that he had been a winner in about three dozen contests based on skill in the writing of advertisements and special articles. In 1922 came an award which was heralded from coast to coast. It was the John Hancock national literary contest based on one of the famous questionnaires of the late Thomas A. Edison. Mr. Quigley won first prize among seven hundred contestants.

At this point we turn to another line of experience which probably developed in our subject his present keen interest in merchandising problems. From 1918 to 1923, as chemical assistant at the Doane Drug Depot, he had opportunity to participate in the work of all departments, from wholesale to



Photo Underwood & Underwood
Mr. Leon V. Quigley.

retail. We understand that he lays great stress on the value of over-the-counter selling as a training in meeting all classes of people and tuning in with their needs and interests.

Combining commercial and academic experience with intensive training both in engineering and writing, Mr. Quigley brings to his chosen profession of public relations counsel, the breadth of understanding which is, in this work, quite valuable. He is regarded as a pioneer in the organization of public relations work in the chemical industry, and his writings dealing with the organization and conduct of such work are distributed by other public relations men to their staff workers for guidance. In the "Handbook of Business Administration", recently published by the American Management Association, the chapter on organization of industrial public relations work is written by Mr. Quigley.

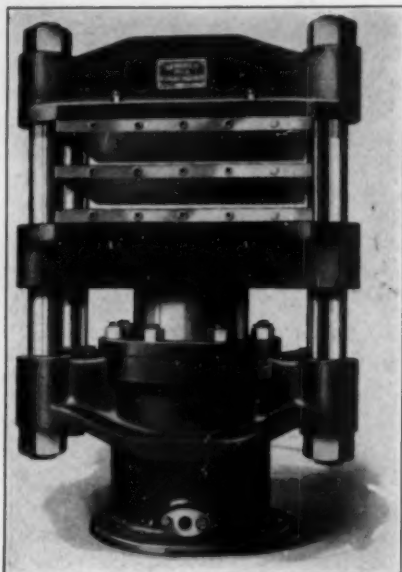
In the professional societies Mr. Quigley has many affiliations. He has served on the Board of Trustees of The Chemists' Club and is at present Chairman of the Committee on

Steam Platen Presses that fit your needs perfectly and assure continuous precision production . .

When a manufacturer tells us his business "is different," we believe him; and the presses we design and build, with full appreciation of those differences, give a wide measure of satisfaction in profitable production. What are your problems? Why not consult the engineering staff of



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ENGINEERS—IRON FOUNDERS—MACHINISTS
In business continuously since 1803



2-Opening Steam
Platen Press

Public Relations. He is a Fellow of the American Institute of Chemists and Secretary-Treasurer of the New York Chapter. He is also a member of the following organizations: American Society of Mechanical Engineers, American Chemical Society, New York Academy of Science, Society for the Promotion of Engineering Education, American Institute of the City of New York, Society of Medical Jurisprudence, and Town Hall Club.






Nicholas Klein

Disastrous Pyroxylin Waste Fire in Osaka, Japan

OSAKA, center of the Japanese pyroxylin plastic industry, was the scene of a disastrous fire some weeks ago. Mr. R. Sekido, editor and publisher of the *Nippon Celluloid Jiho*, writes that a pyroxylin waste warehouse on the outskirts of the city suddenly burst into flames. The material consumed weighed about 1000 kg. but the flames were of such violence that a number of frame dwellings in the vicinity caught fire and sixty people were burned, of whom six subsequently died. The causes of the disaster were not immediately ascertained but the authorities promptly placed severe restrictions on the storage of inflammable materials and checked the activities of domestic fabricators.

Durium Makes New Four Inch Advertising Record

BEGINNING with the October 1st release of their Hit-of-the-Week, Durium Records have included a novel addition to their regular packet. Called the "Musical Magazine", it assumes the form of a four inch phonograph record which carries a sales message for the magazine *College Humor* together with vocal and instrumental entertainment. The record functions very much like a popular magazine which carries paid advertising as well as text mat-

	<h2>P. A. C. FORMALDEHYDE</h2> <ul style="list-style-type: none"> . gives greater efficiency . improves quality of finished plastic products . reduces corrosion of apparatus . permits easier control of reaction <p>all of which provide REAL and DIRECT economies for the plastics manufacturer.</p> <p>The uniform superior quality of P. A. C. Formaldehyde, U.S.P. is steadfastly maintained because it is produced under conditions which insure a steady and unerring source of supply.</p> <p>P. A. C. FORMALDEHYDE meets these specifications:</p> <p>COLOR* - Water White.</p> <p>STRENGTH - Not less than 37% by weight of Formaldehyde.</p> <p>ACIDITY - Less than 0.2% Formic Acid.</p> <p>Write for prices and further information.</p> <p style="text-align: center;">  ROESSLER & HASSLACHER CHEMICAL CO. <small>Incorporated</small> Empire State Building, 350 Fifth Ave. New York, N. Y. </p>	
		

ter, or better, like radio entertainment which is provided by radio advertisers.

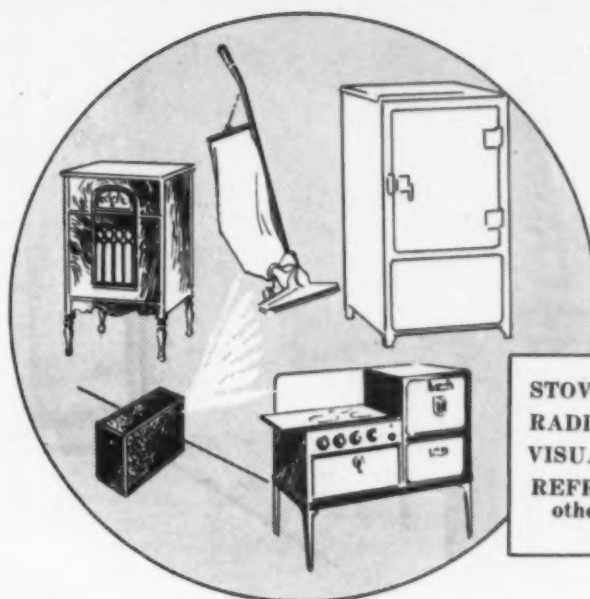
Two manufacturing refinements have made this small record possible. In making the standard ten inch record, six small records are stamped from the material which was ordinarily wasted in the usual process of stamping twelve large records from a single sheet. The sound track has been reduced in width by one-half which makes the four inch record practical from the point of view of duration.

Appearing regularly, the Musical Magazine makes an attractive advertising medium. There is no limit to the number of small records which can be included with the large one and purchasers will find them interesting because of the entertainment value each one bears.

General Electric Employment

AFFIRMING its confidence in the future of the electrical industry, the General Electric Company, through President Gerard Swope, has offered its shop employes a plan which would virtually guarantee them six months employment beginning November 1. The new proposal, which is called "a plan to prevent further layoffs for lack of work," is to be voted on by employes of the company who are members of the General Electric unemployment pension plan, which embraces the great majority of all shop employes of the company.

Approximately \$1,000,000 has already been distributed to General Electric unemployed during the 10 months since December 1, 1930, when the emergency payments under the unemployment plan were started. One-half of this was contributed by the employes working half time or more and the other half by the General Electric Company.



STOVE INDUSTRY
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VISUAL DEMONSTRATION
REFRIGERATOR and many others.

These Industries have profited

by the use of Norloc

Typewriters, Refrigerators, Jewel Cases, Packages and Parts, have profited and been improved by the use of Norloc Molded Parts.

Consult us freely, maybe we have worked out for some other manufacturer, the very problem you are trying to solve. We may have a ready made answer—if not, Norton Engineers, in their well equipped laboratories, will find a solution.

Be guided by Norton experience in handling the molding problems of many of the country's foremost industries.

Send us your blue prints or samples. Let Norton Engineers quote on your specifications.

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is just what you have been looking for. Will take Roll Leaf any width to 5". Positive feed from $\frac{1}{4}$ " to $5\frac{1}{2}$ ". Set ups and adjustments quickly made.

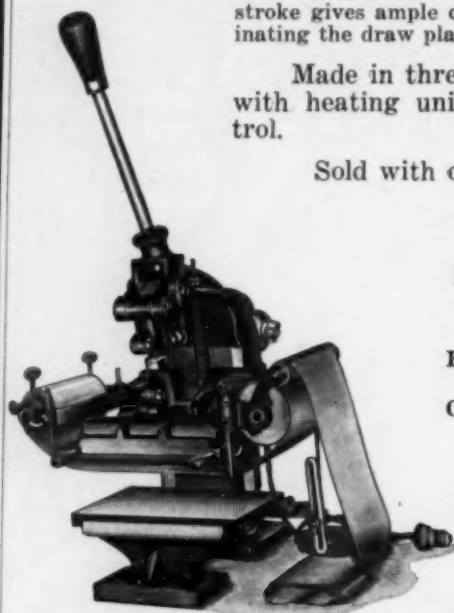
This Press will speed up production. The stroke gives ample clearance to feed in work, eliminating the draw plate operation.

Made in three sizes furnished complete with heating units and 3-way switch control.

Sold with or without roll feed.

We also make:

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ROD TURNING MACHINES
BEVELING MACHINES
FRAZING MACHINES
ELECTRIC STEAM HEATER
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Tool Company**
75 Water Street
LEOMINSTER, MASS.



AMERICAN INSULATOR CORPORATION

*America's Most
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**Molded Products
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Garfield, N. J.	Perth Amboy, N. J.

Factories

Shop Practice Notes On Molding Technic*

By Leon V. Quigley
Technical Editor, Bakelite Corp.

A notebook record of service engineering experiences during the past five years contains many interesting incidents. Typical entries are the following:

The premature hardening of a portion of a mold charge to the point where it is no longer plastic under heat, is usually called pre-curing. Pre-curing results in molded parts of poor strength and finish. It is caused by allowing the charge to stand in the mold for several minutes before being placed in the press. It is a simple matter to avoid pre-curing. The molder should put the mold in the press as quickly as possible before loading. He should also close the average mold within 15 to 30 sec. from the time it is placed between the platens of the press.

Press Efficiency and Platforms

A molder who was producing jar covers was obtaining production of but 130 per day. A stopwatch study of loading and curing time made by a service engineer revealed that it was taking $7\frac{1}{2}$ minutes for each cycle. The press platen was too high and the arbor press too far from the molding press for easy and efficient handling of the molds. A platform was built in front of the presses and the distance between arbor press and molding press was reduced. The result was that production was increased to 190 covers per day, a gain of 45 per cent.

In molding phenol-resinoid materials gases are given off under the heat and pressure of

the molding operation. If a ready escape is not provided for these gases, the molded piece is apt to have interior gas pockets and surface blisters. This trouble can be overcome readily by the practice known to the trade as "breathing" the mold; that is, releasing the pressure for a period of 3 or 4 sec. after the mold is first closed. Pre-heating the molding tablets for 10 or 15 min. at a temperature of 180 to 190 deg. fahr. will also be found a very effective means for checking the tendency to blister. An "air-bound" mold is another fruitful cause of blistering. Such a mold is one in which the top force fits into the chase so snugly that there is no means of escape for the heated air or gases given off in molding. This oc-

curs only in positive molds of the "straight-draw" type. To avoid air binding, the mold force should be made with a free sliding fit in the chase and should be provided with sprue grooves to allow for the escape of gases.

In 1926 a company producing 5000 tube bases per day was using the following cycle: (a) Load, discharge, 1 min, 20 sec. (b) Closing mold, 40 sec. (c) Cure, 2 min. A service engineer demonstrated that the 2-min. cure could be reduced to $1\frac{1}{4}$ min. by puffing. Thus they included in their operation a slight opening, or release, of the mold about 10 sec. after the first closing, and standardized on a cure of $1\frac{1}{4}$ min. In 1930 the cure requires less than 1 min.

Whenever possible the practice of using a small mold in a large press should be avoided. The excessive pressure applied on the small surface of the mold may drive the mold into the platen of the press and score it badly. When it is absolutely necessary to use a large press with a small mold, it is a wise precaution to place at the sides

(Continued on next page)

Local Artists Design Combs For Oyonnax Pyroxylin Industry



THE illustration shows the Queen of the recent "La Fete du Peigne" or Festival of the Comb, which takes place at the end of every summer at Oyonnax, France, which is not very far from Lyons.

Oyonnax is the center of the French comb industry and the girls employed in that industry elect a queen who in turn chooses two ladies-in-waiting for the Festival. The ornaments which they wear have been especially designed and executed by the students of the local art school. This art school naturally gives a good deal of attention to combs. Pyroxylin plastic is used for the ornaments.

*Abstracted and reprinted from A. S. M. E. Transactions.

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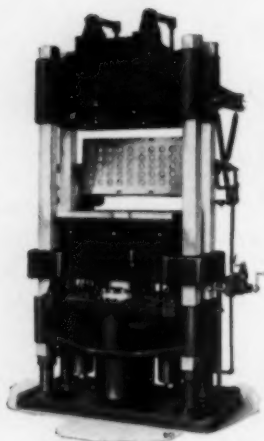
Resinox Corporation

*A subsidiary of Commercial Solvents Corp.
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Metuchen, N. J.

French Hydraulic Machinery



A new tilting die molding machine, (patented). The die or die head tilts mechanically as the platen moves. The only hydraulic cylinders are the pressing and return cylinders. Rigid, accurate, reliable.

Several installations made in large plants.

We build all types of molding presses. Write for catalogs.

The French Oil Mill Machinery Company
Piqua, Ohio

New York

Pittsburgh

Akron

Chicago

of the mold steel blocks of approximately the same height.

One of the best speed records for hand-mold operation is 600 pieces per hour from a single press, using two nine-cavity molds. Time in the press is 40 sec.; transfer, 5 sec. Wall thickness of molded part is 1/16 in. In considering molding speed records, it should always be remembered that excessively short curing time does not impart properties claimed for phenol resinoid material.

Use of Shrink Plugs

In an instance of alleged shrinkage, with finished piece undersize, it was found that the gas-heated presses were operated at too high a temperature. The alleged shrinkage was really warpage. The molded part had a sizeable central slot. Use of shrink plugs eliminated the trouble.

The use of hard water will cause coating of the steam channels in the mold, and this, by interfering with the thermal conductivity of the metal, will influence the curing and chilling effect, and alteration in these factors will cause surface defects on the molded piece.

In molding a typewriter spacer, poor surface, due to insufficient cure, caused by poor conduction, was traced to the fact that the mold had warped. A thin film of resinoid material had become located between the bed plate and the mold. This acted as a heat insulator. The die was machined, and relocated with good contact surface, and the trouble was eliminated.

In molding a coil cap, a void was formed in the center of the molded section. Material was not flowing properly into place because the force of the mold having long pins in it was allowed to rest near an open window for several minutes during the loading operation; consequently it became so cooled that flow of material was retarded. The trouble was corrected by keeping both top and bottom mold

parts hot. Proper molding was facilitated by heating preformed disks for one hour at 210 deg. fahr.

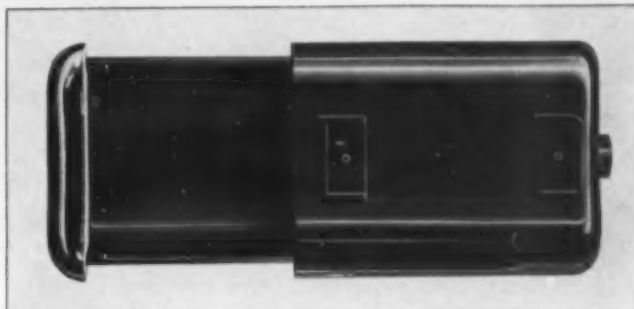
It is good practice to use an air hose to clean off the mold between cycles. Care must be taken, however, not to blow impurities into the supply of molding material and not to blow contamination into recesses of the die. It is sometimes found that the pump supplying the air pressure has its intake located near the floor. An air filter should be included in the air supply line.

On a 12-cavity mold for a cylindrical automobile part, four cavities had been left empty because of broken pins. Operators were equipped with five sets of shrink plugs for each cavity, and they stated that on taking from a given cavity five successive parts, differences after shrinking on the plugs until cold were between 0.003 and 0.007 in. The die cavities differed slightly; hence the different sets of marked shrink plugs. In spite of marked indication, the operator was not taking any particular care to put the part from a given cavity on the right plug. Proper use of shrink plugs removed trouble.

Misaligned mold pins are always a source of molded parts cracking or breaking.

Pre-Warming Adds Strength

A molded tool handle was found to be breaking in service. Examination showed that the resinoid material was under-cured. Moreover, considerable material had escaped from the flash mold instead of being compressed into the finished handle. The shape of the preform was changed, and the time of cure was increased to 6 min. The tablets were pre-warmed, and the mold was closed slower to prevent escape of material. A handle, thus made, could be pounded on the floor until the metal part was seriously deformed, and the handle was unimpaired.



A PROBLEM ▼ ▼ ▼

THIS MOLDED PIECE HAD TO BE WATER-TIGHT
AND NON-CORROSIVE IN SALT WATER

Our engineers solved this problem. You, too,
may have a complicated molded part upon which our
experience and equipment would prove advantageous.



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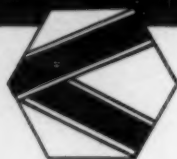
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THESE TRADE MARKS *Stand For*
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The design and construction of moulds, as well as the art of moulding, requires highly specialized skill in producing the finished article.

Insulation Manufacturing Co. has this skill which has been proved by over thirty-five years of custom moulding to the trades.



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When you are in the market for moulded articles, we would like to receive your inquiries, which will have our prompt attention.

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Requirements in exacting shades and colors are more severe than ever. Crystillin's new fall shades satisfy the most discriminating taste where plastic solids are required.

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are now available to the trade in production quantity orders. Crystillin's popularity has created a three-fold increase in output capacity eliminating all delays in delivery.

Crystillin is the economical material that will beautify your product. Ease in fabrication and speed in finishing recommend it. Supplied in blocks, rods, tubes and special castings, Crystillin's natural luster and depth of color are its outstanding characteristics.



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NEWS of the INDUSTRY

Redman Gets "Grasselli" Medal Award

THE Grasselli Medal, industry's annual tribute to distinction in applied chemistry, has been awarded for 1931 to Dr. L. V. Redman of Bloomfield, N. J., vice president and director of research of the Bakelite Corporation, it was announced by the American Section of the Society of Chemical Industry, the British organization.

The medal will be bestowed upon Dr. Redman at an assembly of the chemical societies of the New York area on November 6. Prof. D. D. Jackson, executive officer of the Department of Chemical Engineering, Columbia University, will make the speech of presentation. F. W. Willard, Works Manager of the Western Electric Company, Kearny, N. J., will describe the accomplishment of the medalist. Dr. Redman will deliver an address on "Research as a Fixed Charge."

Roessler & Hasslacher Transfers Personnel

THE following members of the research staff of The Roessler & Hasslacher Chemical Company, Incorporated, have been transferred from the plant at Perth Amboy, N. J., to the Niagara Falls, N. Y., plant within the past three months: Dr. Sterling Temple, Dr. B. S. Lacy, Dr. A. M. Muckenfuss, Dr. J. F. Reichert, Dr. C. J. Wernlund, Mr. A. T. Hawkinson, Mr. A. W. Rudel, Mr. J. M. Wainscott, Mr. H. A. Bond.

Other transfers to the Niagara Falls plant include: from Perth Amboy—Mr. P. M. Paulson, Patent Specialist; Mr. M. Marean, Librarian; from the New York office—Mr. I. L. Ressler, Entomologist.

Johnson Forms New Plastic Waste Converting Firm

THE Cellulose Waste Products Company has recently been formed, to deal in pyroxylin waste, film waste and cellulose acetate scrap, as well as molding powders. The company is headed by Horace C. Johnson, a pioneer in the pyroxylin waste business, who, with his brother, many years ago, incorporated the Johnson Products Company and built it from a modest start into a half million dollar corporation. The offices of the company are at Arlington, New Jersey.

Pratt & Whitney Acquires Keller Mechanical Eng'g Corp.

ANNOUNCEMENT was made that on October 1, 1931, the business of the Keller Mechanical Engineering Corporation was acquired by The Pratt & Whitney Company, Hartford, Connecticut, and henceforth will

be operated as The Pratt & Whitney Company, Keller Division. Until further notice operations will continue at 70 Washington Street, Brooklyn. The Division will handle unfilled sales and purchase orders and will continue the customary business activities of the Keller Mechanical Engineering Corporation. Mr. Joseph F. Keller and Mr. Alexander S. Keller will continue in the management.

HARRY L. Erlicher who entered the employ of the General Electric Company as an office boy in the purchasing department, has been appointed purchasing agent, succeeding L. G. Banker, who retired on October 1 after completing 43 years continuous service with the company.

In his new position Mr. Erlicher will direct purchases of materials aggregating more than \$100,000,000 a year.

Catalin Acquires Synthetic Varnish Resin Producing Unit

THE American Catalin Corporation, manufacturers of phenolic resins in solid form by the casting process, have purchased the plant of the Synthetic Resins Company, Guttenberg, New Jersey, including all their patent rights, manufacturing processes, as well as goodwill.

The new synthetic resin division of Catalin will, for the present, continue to operate in Guttenberg under the direction of Dr. Felix Lauter, and produce synthetic resins used in the manufacture of lacquer, varnishes, enamels and paints. This material, called Catalin L-5 or V-30, replaces the higher grade natural gums and produces a four hour varnish as well as a quick drying lacquer which stands up even under abnormal atmospheric conditions with-

out breakdown of the film. One of the characteristics of this varnish is that it takes even 50% zinc without livering, which is quite unusual for resins of that type.

In line with its ever increasing distribution, The American Catalin Corporation has just finished extensive improvements in its Perth Amboy plant which, although only finished a year ago, has been more than doubled in capacity. Extensive alterations are also being made at the Guttenberg plant, providing for increased manufacturing as well as research facilities. These two plants supplement each other in so far as the Perth Amboy plant produces much of the raw material used in the manufacture of Catalin Varnish Resins and Enamel Bases.

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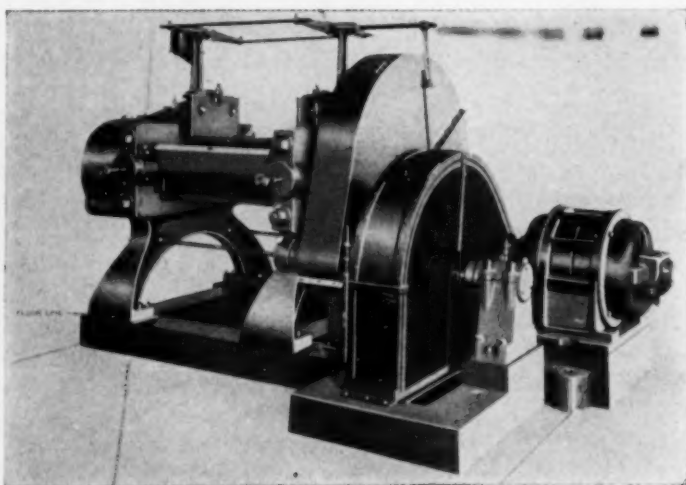
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Ownership Statement

Statement of ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912 of *Plastics* published monthly at Washington, N. J., for April 1, 1931.

State of New York, County of New York ss.: Before me, a Notary Public in and for the State and county aforesaid, personally appeared R. C. Gilmore, Jr., who, having been duly sworn according to law, deposes and says that he is the Business Manager of *Plastics* and Molded Products and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, *Plastics Publications Inc.*, 114 E. 32nd Street, New York City; editor, Carl Marx, 114 E. 32nd Street, New York City; managing editor, Nicholas Klein, 114 E. 32nd Street, New York City; business manager, R. C. Gilmore, Jr., 114 E. 32nd Street, New York City.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member must be given.) *Plastics Publications Inc.*: R. C. Gilmore, Jr., 114 E. 32nd Street, New York City; R. C. Gilmore, Sr., 114 E. 32nd Street, New York City; Carl Marx, 114 E. 32nd Street, New York City; A. K. Gilmore, 114 E. 32nd Street, New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding one per cent of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) Sylvan Hoffman, 114 E. 32nd Street, New York City.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is (This information is required from daily publications only).

R. C. GILMORE, JR.

Business Manager.

Sworn to and subscribed before me this 22nd day of October, 1931.

(SEAL)

JAMES J. DOOLEY

My commission expires March 30, 1932.
Form 3526—Ed. 1924.

Molded Monophone

(Continued from page 601)

and can be molded with unusual accuracy. Molded parts come directly from the press with a high, satiny finish which requires no additional polishing or coating.

In structure, the new Strowger Monophone in colors remains

PLASTICS & MOLDED PRODUCTS

unchanged. The handpiece is scientifically balanced to fit easily and comfortably into the hand. "Anti-sidetone"—a feature which makes the user "speak-up" when using the Monophone and also adds to the clarity of transmission—is retained in the design of the Lumarith modeled Monophone. The use of molded materials, it has been found, places no restrictions on the manufacture of the instrument, either in design or in operation.

Strowger Monophone Features Retained

Practically all parts of the Strowger Monophone can be molded from this strong, durable material. The handpiece has interior struts incorporated into its interior design to make breakage next to impossible. Its cradle is of exceptionally heavy, solid construction, the four projecting tips which hold the handpiece in position being blunt and sturdy to an extreme.

A low center of gravity in the broad, heavy base keeps the phone from tipping, while the dial is recessed in the case with a low finger plate to escape injury if the instrument is dropped.

A "non-skid" rubber base, such as always has been an integral part of the Strowger Monophone, is retained in the instrument molded from Lumarith. A soft rubber ring fits snugly around the base and forms a part of it. This prevents slipping of the instrument during dialing and protects the polished surfaces of desks, tables and stands.

The new Strowger Monophone in Lumarith makes a strong, durable and attractive instrument for the telephone subscriber whose discriminating taste demands beauty as well as utility in the appointments of his home or office. It is manufactured by Automatic Electric, Inc., Chicago, Illinois.



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*Installation view of STOKES Single-punch and Rotary Preforming Presses in Monowatt Electric Company's plant, Meriden, Conn. Other Installation views have appeared and will follow in other advertisements.

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Book Review

Science in Action, By Edward R. Weidlein and William A. Hamor, McGraw-Hill Book Company, New York City. 310 pp. 1931. \$3.00.

THE authors of this book are respectively director and assistant director of that outstanding research organization, the Mellon Institute, and as such are prominent proponents of the idea of research in industry. The present work recounts the rise, influence and philosophy of scientific research of all kinds. It records the successes of research in many familiar industries, in medicine, its contributions to engineering economics and in the reduction of wastage.

The exploits of science in plastics are singled out for special mention under a separate chapter heading but the bulk of the discussion is devoted to rubber, more particularly the recently-developed electro-deposited form, and cellulose derivatives, synthetic sausage casings particularly. The cellulose esters and synthetic resinoids

are mentioned by name, some of their applications are listed, the raw materials used in their manufacture are noted—and barely any more.

While many specialists in plastics may feel disappointed in the scant treatment of their specialty, there is much to be gained in a study of Part V and Part VI. Here the authors depart from the physical aspects of scientific research and go into an examination of methods and results in the management and rationalization of business in a broad sense. They promptly clear scientific management of the now defunct "efficiency engineering" and expand on some of the problems met in production, distribution, merchandising, personnel, and in the formulation of financial and economic policies. As a preliminary to further study, the executive would do well to get his introduction to these topics in these pages.

Chemical Engineering Catalog, Sixteenth Edition. Published by Chemical Catalog Co., Inc. New York City, 1931, 1017 pp.

THE sixteenth edition of this encyclopedic reference book presents no new departures in the way of form. It remains principally the complete guide to sources for equipment used in the process industries, with lesser divisions devoted to raw materials, technical literature and trade names. The committee in charge of publications, which is annually appointed by the three major professional societies, sees a need for added data on equipment which is not specifically chemical such as power plant, electrical, lubricants, material handling which are essential accessories in chemical production operations. Heretofore, several plans for the purchase of the Catalog were

noted in the introduction. This information is omitted in the current edition but will undoubtedly be supplied by the publishers to prospective users of the book.

Methods of Test Relating To Electrical Insulating Materials

THE American Society for Testing Materials has issued a compilation of its standards and tentative standards which relate to electrical insulating materials, together with the annual report of its Committee D-9 which functions in this field. The book comprises 209 pages.

There are included standard methods of testing molded materials used for insulation, electrical porcelain and electrical insulating oils. Tentative methods are given for testing a large

number of insulating materials such as varnishes, sheet and tape (for dielectric strength), compounds used for splicing cables and filling potheads, untreated paper, varnished cloths and cloth tapes and laminated materials; also, tests for determining resistance to impact, resistivity and thermal conductivities of insulating materials.

The specifications include cover friction tape, rubber insulating tape, rubber gloves, rubber matting and asbestos tape. Also included are specifications for tests and tolerances of electrical cotton yarns, electrical silk and cotton tapes and asbestos yarns.

There are, in addition to the standards mentioned above, others which involve materials used in the electrical insulating field. The price of the book is \$1.25. It can be obtained from A. S. T. M. Headquarters, 1315 Spruce Street, Philadelphia.

Farrel-Birmingham Designs New Industrial Gear Unit

STANDARD industrial gear units are designed for use with electric motors running at a maximum speed of 1800 r.p.m., and they are suitable for reducing speed but not for increasing speed, and for tooth velocities not exceeding 2,000 f.p.m.

When a gear unit is required for connection to a steam turbine or for any other purpose where the speed of the pinion shaft is over 1800 r.p.m. it has been considered special. Now, however, the Farrel-Birmingham Company, Inc., Buffalo, N. Y., has developed and standardized a series of gear units suitable for speeds up to 6,000 r.p.m. and powers from 120 h. p. to 2,500 h. p. with ratios up to 10 to 1 for either increasing or reducing speed.

This new series of gear units is especially adapted for connecting Diesel or Gas engines to centrifugal pumps. The latter are designed to operate at speeds ranging from 1200 r.p.m. to 3600 r.p.m.

PLASTICS & MOLDED PRODUCTS

TECHNICAL ABSTRACT SECTION

A Review of Literature and Patents

Resin Complex and Method of Producing the Same. Israel Rosenblum, of Jackson Heights, New York. U. S. P. 1,808,716; June 2, 1931.

This invention relates to fusible and soluble condensation products of a new and improved type derived from the interaction of an organic salt of a metal with a substance or a mixture of substances capable of yielding complexes adapted for use in varnishes, or derived from the interaction of such an organic salt-containing product and another substance capable of combining therewith.

Example 3.—A complex derived from the interaction of 100 pounds of phenol or cresol, or a mixture of both, 50 pounds of zinc resinate, 200 pounds of formaldehyde (40% solution) in the presence of a solvent such as 1000 pounds of tri-glyceridic rosin ester or cumarone resin is heated slowly to about 130° C. by refluxing or under pressure. When the reaction is advanced, the water is evaporated and the temperature raised to about 240° C. A practically neutral gum of high melting point, low viscosity, and very good solubility is obtained, the gum being also very resistant toward alkalis.

Example 4.—100 pounds of phenol or cresol, or a mixture of both, 60 pounds of zinc resinate or zinc oleate, and 700 pounds of asphaltum are heated to a temperature of about 120-200° C. by refluxing or under pressure, the phenol being condensed with an amount of formaldehyde corresponding to that employed in any of the preceding examples. The product is dehydrated at about 150° C. and the temperature raised to about 270° C. A gum of good solubility, practically neutral, which is valuable because of its high melting point and flexibility, is obtained.

Composition Battery Boxes. Albert B. Mackey of Cleveland Heights, and Edwin A. Mackey, of Cleveland, Ohio, assignors to the Goliath Rubber Company, of Cleveland, Ohio. U. S. P. 1,824,220; Sept. 22, 1931.

The essential ingredients of the composition are, a bituminous binder, a fibrous material, and a wax.

	Parts by weight
Ground tire carcass	15
Used tire fabric derubberized and ground	7½
Wax	7½
Carbon black	1½
Siliceous material	30
Blown asphalt compound	22½
Gilsonite	16

Machine for Extruding Ophthalmic Mountings. Robert A. Boswell, of Washington, District of Columbia.

U. S. P. 1,814,819; July 14, 1931.

A machine for forming ophthalmic mountings, comprising a die having an opening whose contour conforms to the configuration of an ophthalmic mounting, means for expressing plastic material through the die, a knife operating against the outer face of the die and moveable across the opening thereof, a driving means, and means operating automatically to alternately connect the driving means with the expressing means and knife-operating means.

The herein set forth process of manufacturing ophthalmic mountings, consisting in forming of plastic material an article whose cross sectional contour conforms to the configuration of an ophthalmic mounting, keeping the article constantly shaped, feeding the material in a mass and thereby maintaining a constant integral connection with the article during the forming step, hence insuring a constant shaping of the material to form the article, cooling the article inwardly through its outer wall from the outer periphery of the article, and intermittently interrupting the feeding of said material, and hence allowing sufficient time for the cooling of the article, cutting the article into ophthalmic mountings subsequently to the cooling step, each mounting being cut alternately with the interrupting step.

Extruding Die for Forming Ophthalmic Mountings. Robert A. Boswell, of Washington, District of Columbia. U. S. P. 1,814,820; July 14, 1931.

A die for extruding ophthalmic mountings, comprising a body with an opening, whose contour adjacent the outlet portion of the opening conforms to the configuration of an ophthalmic mounting, said die having cores fixedly supported in the circular portions of the opening for forming the eyes of a mounting, the die being hollow around the walls of said circular portions, said hollow extending between the circular portions, whereby a cooling fluid may temper the bridge of the mounting.

Pigmented Pyroxylin Compositions. Arnold M. Taylor and Arthur R. Chapman, of Stamford, Connecticut, Assignors to Atlas Powder Company, of Wilmington, Delaware. U. S. P. 1,824,177; Sept. 22, 1931.

The process of preparing a lacquer enamel which will dry with a high gloss, which consists of employing a moisture bearing pigment and designedly absorbing the moisture therefrom by wetting the same with an anhydrous and highly hygroscopic organic liquid, and thereafter

incorporating the wetted pigment in a nitrocellulose solution.

The process of preparing a nitrocellulose lacquer enamel, adapted to dry with a high gloss, which consists of employing a moisture bearing pigment, wetting the same with absolute ethyl alcohol to thereby absorb the entrained moisture content, and thereafter mixing the wetted pigment with a nitrocellulose solution, comprising a solvent with which the said ethyl alcohol is miscible.

Steering Wheel. Enoch Karrer of Akron, Ohio, Assignor to the B. F. Goodrich Company, of New York, N. Y. U. S. P. 1,823,980; Sept. 22, 1931.

A steering wheel comprising a body structure of molded material, and an internal reinforcement therein comprising a laminated structure composed of a single piece of material.

A steering wheel comprising a body structure of molded material, an internal reinforcement therein comprising a laminated, integral rim, spoke, and hub structure, and a hub-reinforcement member secured in the hub portion of said reinforcement structure.

Method of Forming Steering Wheels.

Harry A. Husted, of Cleveland, Ohio, Assignor to the H. A. Husted Company, of Detroit, Michigan. U. S. P. 1,823,562; Sept. 15, 1931.

The method of forming a steering wheel, which consists in forming a reinforcing spider from a single metal plate to provide integral rim, spoke and hub portions, forming longitudinal strengthening depressions in the spokes extending through said hub, securing an annular plate to said hub to bridge said depressions for restraining said hub against distortion during the subsequent forming operation, and molding composition material under pressure around and bonding the same to said reinforcing spider.

The method of forming steering wheels, which consists in forming a one-piece metal reinforcing spider having integral rim, spoke and hub portions, forming strengthening depressions in said spider radiating from the inner edge of said hub portion into said spoke portions, securing an annular plate to said hub to bridge said depressions therein for restraining said hub against distortion during the subsequent forming operation, supporting said spider in a mold cavity between component composition material elements, and forcing said composition material to surround and become bonded to said spider, and to fill said mold cavities.

Process of Manufacturing Artificial Cork. Enrique Vincke, of Barcelona, Spain, Assignor to Armstrong

Hydraulic Operating Valves

Fig. 1 represents a valve for operating Semi-Automatic Presses for Hot or Cold Molding, using high and low water pressures and Relief, either with or without single or double "Pull-Back" cylinders. The operating lever can be placed in any position shown in Fig. 2.

Made in several sizes for use on large or small presses.

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Fig. 1

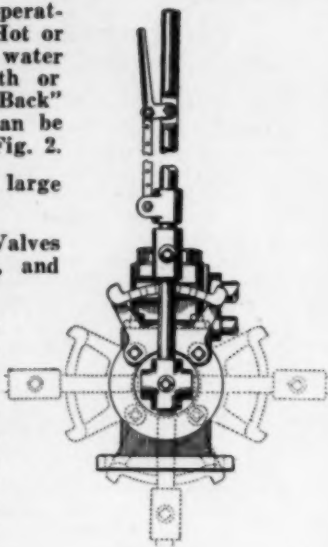


Fig. 2

Established 1872.

The Dunning & Boschert Press Co., Inc.

330 West Water St., Syracuse, N. Y.

Cork Company, of Lancaster, Pennsylvania. U. S. P. 1,820,411; Aug. 25, 1931.

Stencil Sheet. Armand de Waele, of Old Southgate, London, England, Assignor to D. Gestetner, Limited, of London, England. U. S. P. 1,819,078; Aug. 18, 1931.

A stencil sheet adapted to be stenciled by pressure comprising a sheet of Yoshino paper and a coating thereon, substantially free from water, adapted to be stenciled by pressure including a dispersion of a zinc salt of ricinoleic acid in coagulated gelatine and a proportion of an oleaginous tempering agent.

A process of producing stencil sheets which comprises coating sheets of Yoshino paper with an aqueous dispersion of a gelatinizing organic colloid, a water-insoluble soap an oleaginous material and a proportion of a volatile material adapted to restrain the tendency of the water-insoluble soap to form a disperse system of the oil-in-water type, while permitting by its volatilization during setting of the organic colloid, the water-insoluble soap to exercise its capacity to form a disperse system of the water-in-oil type.

The Production of Plastic Products, Paints, and Lacquers From Rubber. Francis Clifford Dyche-Teague, of London, England. U. S. P. 1,819,136; Aug. 18, 1931.

A process for the production of a chlorinated rubber product capable of forming solutions of low viscosity consisting in rolling rubber in a mill until said rubber is disaggregated, making a solution of the disaggregated mass and passing chlorine through the solution.

A process for the production of a chlorinated rubber product capable of forming solutions of low viscosity consisting in rolling rubber in a mill until said rubber is disaggregated, making a solution of the disaggregated mass in a solvent such as chlorinated hydrocarbon and passing chlorine through the solution.

Phonograph Record Disk Containing A Playing Needle. Paul J. Schwarzhaupt, of Scotia, New York, Assignor to General Electric Company. U. S. P. 1,821,851; Sept. 1, 1931.

In that portion of the disk between the center hole and the record zone the disk is provided with an opening of a size adapted to receive a playing needle such as is commonly used for playing disk records. The needle opening may be made in various ways, for example, where the record has a paper base and is blanked out of a large sheet the opening for the needle may be made at the same time that the disk is blanked and the opening 3 is punched. A special needle or stylus 4 having the form of point which especially adapts the needle for the playing of this record is embedded in the record disk by inserting it in the aforesaid opening. The needle may make a sufficiently tight fit in the opening that it will not be lost out during trans-



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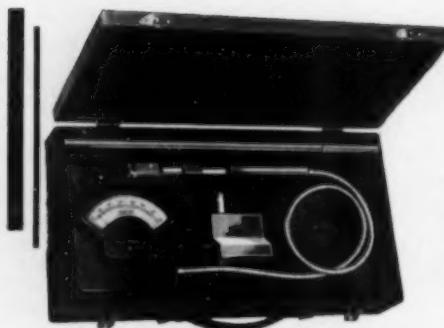
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portation of the record but I prefer to insure its retention in the disk by the use of some hardening liquid as shown at 5 which, for example, may be a drop or two of the lacquer which forms the record surface of the disk.

Shoe Stiffener. Maurice Godfrey Hill and Thomas Hamer Bristlow, of Leicester, England, Assignors to United Shoe Machinery Corporation, of Paterson, New Jersey. U. S. P. 1,821,939; Sept. 8, 1931.

A stiffener for uppers of boots and shoes adapted to be softened by heat and conformed to the last at the same time as is the upper, said stiffener consisting of absorbent sheet material impregnated with a mixture comprising a large amount of thermoplastic substance and an amount of finely divided vulcanized rubber so small as to have substantially no effect upon the thermoplasticity of the stiffener but sufficient to make the stiffener more resilient than it otherwise would be.

Method of Manufacturing Molded Articles. Robert Weitzel, of Paris, France. U. S. P. 1,822,762; Sept. 8, 1931.

A method of molding pieces of furniture or other articles, which comprises coating the mold with a substance preventing adhesion and then with several coats of lacquer paint or sizing, covering the lacquer with a layer of thin cloth, and then covering the whole with several layers of cloth coated with a product adapted to harden in the air.

Hand Grip Sleeve and Method of Making Same. Richard T. Griffiths, of Akron, Ohio, Assignor, by Mesne Assignments, to Miller Rubber Company Inc., of Wilmington, Delaware. U. S. P. 1,822,212; Sept. 8, 1931.

As an article of manufacture, a hand grip sleeve of relatively soft resilient rubber having protuberances of less resilient rubber resiliently supported thereby and homogeneously united thereto.

Shoe Soles of Molded Plastic Composition. Donald H. Bell, of Beverly, Massachusetts. U. S. P. 1,817,287; Aug. 4, 1931.

The process of producing a pair of shoe soles from plastic material which comprises molding and vulcanizing by heat and pressure while in the mold a suitable plastic material to produce a unit having opposite faces corresponding respectively to the tread surface of a shoe sole and of a thickness twice that of the desired sole, then dividing said unit longitudinally along a central plane parallel to the upper and lower surfaces of the unit, thereby providing a pair of soles having smooth condensed tread surfaces and edges with exactly complementary peripheries and with each sole presenting a rough and porous upper surface adapted to be securely cemented to the inner sole of the shoe.



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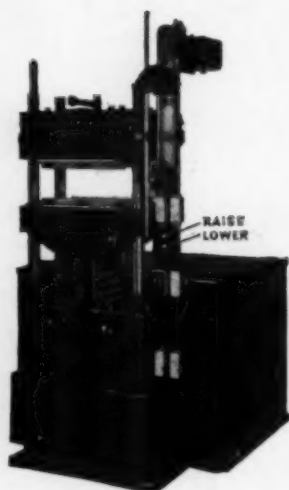
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BOSTON, MASS.

Shellac Composition. Richard E. Sumner, of Plainfield, New Jersey, Assignor to The Calco Chemical Company, Inc., of Bound Brook, New Jersey. U. S. P. 1,816,447; July 28, 1931.

	Parts
Shellac	31.5
Induline base	3.5
Filler	6.7

This composition produces a record superior in strength, in durability and in color to one produced from a similar composition having carbon black as the coloring medium and containing 6% more shellac than my composition.

The filler may consist of any of the ingredients or mixtures of ingredients heretofore used in record compositions, and the agglomerant may be either pure shellac or adulterated shellac (i. e. shellac substitutes with a substantial portion of pure shellac), both of which are to be understood to be included by the term "shellac" as used herein.

Coating Composition. Frederick C. Hahn, of Wilmington, Delaware, Assignor to E. I. Du Pont De Nemours & Company, of Wilmington, Delaware. U. S. P. 1,812,335; June 30, 1931.

Example 1

	Pts. by wt.
Cellulose acetate	12
Monoethylin phthalate	12
Diethyl phthalate	6
Solvent	79

Example 2

	Pts. by wt.
Cellulose acetate	12
Monoethylin oxalate	3
Dibutyl phthalate	6
Solvent	179

Synthetic Resin Compound. Charles G. Moore, of Lakewood, and Milton Zucker, of Cleveland, Ohio, Assignors to the Gliddon Company, of Cleveland, Ohio. U. S. P. 1,812,639; June 30, 1931.

A synthetic resin, comprising the reaction product of an organic polybasic acid, a polyhydric alcohol, and the fatty acids of rubber seed oil.

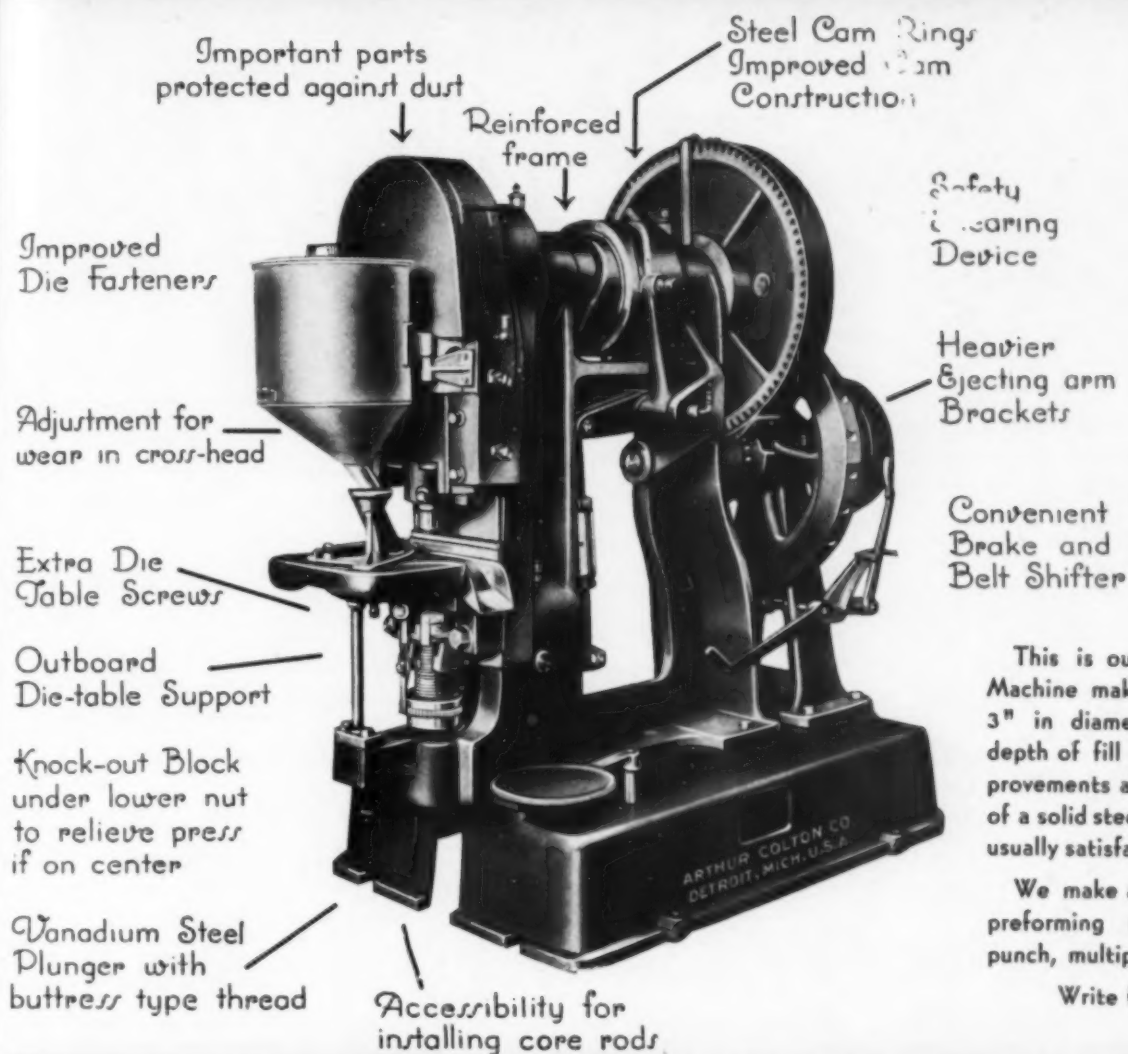
A synthetic resin, which comprises the reaction product of an organic polybasic acid, glycerol, and the fatty acids of rubber seed oil.

Vinyl Derivatives of Acetylene. Julius A. Nieuwland, of Notre Dame, Indiana, Assignor to E. I. Du Pont De Nemours & Company, of Wilmington, Delaware. U. S. P. 1,811,959; June 30, 1931.

The method of producing from acetylene a hydrocarbon of higher molecular weight which comprises passing acetylene into a saturated aqueous solution of ammonium chloride, said solution containing also copper powder, agitating the mixture and distilling off the highly unsaturated hydrocarbon that is formed of higher molecular weight than acetylene. There are 22 claims including claim 17, which reads simply "Divinyl Acetylene."

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Advertisers' Index

Advance Chemical & Solvents Corp.	618
Aldur Corp.	613
American-British Chemical Supplies, Inc.	630
American Insulator Corp.	624
American Record Corp.	627
American Plastics Corp.	598
Bakelite Corp.	589
Baker Perkins Co., Inc.	618
Barrett Co., The	631
Bates & Co., The	641
Becker-Moore Co.	640
Burnet Co., The	640
Cavagnaro, John J.	614
Celluloid Corp.	644
Chicago Molded Products Co.	634
Claremont Waste Mfg. Co.	641
Colton, Arthur, Co.	637
Consolidated Products Corp.	639
Crystillin Products Corp.	628
Doerfler, L., Mfg. Co.	638
Dow Chemical Co.	595
Dunning & Boschert	634
Du Pont Viscoloid Co.	592
Eastman Kodak Co.	611
Economy Ticket & Label Co.	611
Farrel-Birmingham Co., Inc.	615
French Oil Mill Machinery Co.	621
General Dyestuff Corp.	635
General Electric Co.	596
General Plastics, Inc.	591
Hahn Co., Harry W.	616
Heyden Chemical Corp.	624
Insulation Mfg. Co.	628
Jewell Electrical Instrument Co.	634
Kuhn & Jacob Machine & Tool Co.	616
Loomis Co., Evarts G.	614-5
Marblette Corp.	594
Makalot Corp.	620
Monsanto Chemical Works	627
Newark Die Co.	639
Norton Laboratories	623
Peckham Mfg. Co.	640
Recto Mfg. Co.	618
Resinox Corp.	626
Roessler and Hasslacher Chemical Co., Inc.	622
Schering Corp.	628
Shaw Insulator Co.	616
Standard Machinery Co.	620
Standard Mirror Co.	641
Standard Tool Co.	624
Stokes Mach. Co., F. J.	631
Synthetic Plastics Co.	597
Terkelsen Machine Co.	636
Thropp, Wm. R., & Sons, Co.	630
Wood & Co., R. D.	622

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Planning and Doing

(Continued from page 600)

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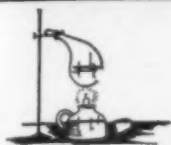
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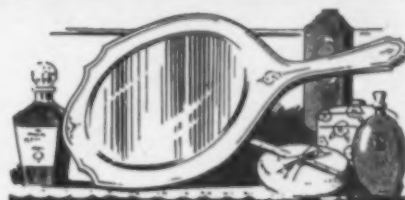
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And Now, In Closing:

BUSINESS is not only getting better, it is better . . . but the price situation is ever worse . . . no new plants, but some changes . . . Pioneer Radio is now Pioneer Products . . . Van Norman, late of Belden and Imperial, is now with Economy Fuse . . . This concern, by the way, is making their own . . . Henry Ryan, ex-Durez, now with Allen-Bradley . . . Meyenberg was recently made plant superintendent at Imperial, and Lilja is out . . . The Plaskon-Monowatt hook-up is creating a stir . . . One of the nicest new closure lines is seen on The DuBarry preparations . . . and The Schick Dry Shaver is finally being advertised! . . . many plants are trying to expand, but are finding capital scarce . . . however, new machinery is on the cars to some sections . . . There is a nice new varnish resin out . . . not yet on the market, though . . . Several people have their eyes on the cast-phenolic field . . . and one of the large steel companies has its eye on the field generally . . . Remember Fred Weiker's All-American? . . . he is now President of Lenthéric, Paris . . . Contrary to rumor, there has been no slump in the depression . . . The Radio Corp. isn't through with trouble, after all . . . nor are any of us . . . The Emerman Red-Book lists some wonderful machinery buys . . . but our next issue will have even more . . . Du Pont now has a hand in the "cup that cheers" . . . There is a perfectly swell Pyralin index of what to mix and when to mix it . . . don't put it off! . . .

THIS industry owes much to Thomas Alva Edison. Directly and indirectly, his brilliant mind created new outlets for var-

ious plastic materials. Even during the past two years, these outlets have been constant. Years from now, when other men have been forgotten, Edison will be honored and remembered. This industry may have more cause to remember than is apparent today, for time will be the true test of his contributions and our gratitude.

VERY quietly—for us—we slid past our sixth birthday. A few friends remembered, but there was no general celebration. We feel we have done well, though not well enough. There are still reforms to be made and misplaced promotion to be spiked. More important, there are many new markets to be developed. We dedicate the future to the accomplishment of this latter ideal, and give thanks to all our friends and clients for their part in the progress made so far. May their interest continue, and in greater number.

I ALWAYS like the kiddies' viewpoint as Pop Hayes, an old friend of mine used to say, "Dogs and children are sincere. They don't slobber over you unless they mean it."

It takes a couple of thousand nuts to hold an automobile together, but only one to scatter it all over the map. This isn't original—I stole it as no doubt the fellow I got it from did.

*From Old Bill in
The Durez Molder*

THERE is never any permanence in one type of market. Today, as in the past year or more, we are having a so-called "Buyer's Market." It is called that because the supplier is subordinate to the market he

reaches. But this type cannot continue, and the time will again come when the supplier does the selling and the buyer only buys. Then, later, we will have a shift back again.

Undoubtedly, this needs a cure, but the cure must come from the industrial purchaser. A more complete knowledge of methods and costs would show him that business cannot be placed at a loss to the supplier without subsequent injury to the product. In small lots, the work may be successful, but in volume production, a fraction of a cent per piece means thousands of dollars—red—that must be atoned for. So the product is the medium of recovering the loss.

This is a Buyer's market. It probably will be for some time to come. Our buyer must learn, as we said, but rather than suffer by learning from experience he should learn from more knowledge. He not only should, he will!

WORKERS in the field are often prone to take themselves and their work for granted. The education of manufacturers, purchasing agents and product designers in the properties and possibilities of plastic materials must go on for a long time, however, before they will think of these materials in the same breath as wood and metals. Mr. Harry M. Dent, president of General Plastics, Inc., performed a distinct service to the advancement of the industry in preparing the article on "Phenolic Plastics" which appeared in the September issue of The Executives Service Bulletin, released by the Metropolitan Life Insurance Company's Policyholders Service-Bureau.

PLASTICS & MOLDED PRODUCTS